

Appendix H

Narrows Project Final Environmental Impact Statement Comments and Responses

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FEDERAL AGENCIES

- 1. Bureau of Land Management, Utah State Office, State Director**
- 2. U.S. Environmental Protection Agency, James B. Martin, Region 8,
Regional Administrator to U.S. Army Corps of Engineers**
- 3. U.S. Environmental Protection Agency, Larry Svoboda, Region 8,
Director, National Environmental Protection Act Program,
Office of Ecosystems Protection and Remediation**
- 4. U.S. Fish and Wildlife Service, Amy Defreese, Utah Field Supervisor**
- 5. U.S. Forest Service, Michael Davis, Environmental Coordinator,
Manti-LaSal National Forest**
- 6. U.S. Geological Survey, James F. Devine, Senior Advisor of Science
Applications**
- 7. U.S. House of Representatives, Representative, Jason Chaffetz, Utah,
3rd District**
- 8. U.S. House of Representatives, Representative Jim Matheson, Utah,
2nd District**

1. **BUREAU OF LAND MANAGEMENT, UTAH STATE OFFICE,
STATE DIRECTOR**



IN REPLY REFER TO:
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(UT-935)

ORIGINAL

United States Department of the Interior

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Utah State Office
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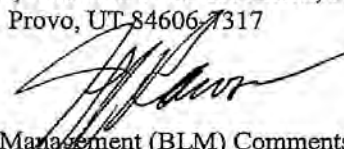
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Action:
Classification: ENV - 10.00
Project: Narrows
Comment No: 10034647
File No: 1122816

Memorandum

To: Bureau of Reclamation, Attention Peter Crookston, PRO-774
302 East 1860 South, Provo, UT 84606-7317

From: State Director 

Subject: Utah Bureau of Land Management (BLM) Comments on Narrows Project
Supplemental Draft Environmental Impact Statement (SDEIS).

The Utah BLM has reviewed the SDEIS for the Narrows Project (DES-09-55) and has the following comments and concerns.

General Comments:

1. BLM agrees with the finding that the proposed reservoir does not overlay recoverable coal resources. However, BLM is concerned that if project facilities are not designed to proper standards to withstand seismic events from coal mining in the Wasatch Plateau, placement of the Narrows Project at the proposed location would jeopardize future recovery of federal coal reserves.

- 1-1 2. The term "project facilities" is used throughout the SDEIS, often without specificity on what "project facilities" includes. Design criteria for all project facilities and activities, including construction and operation of the dam, all abutments, grouting, keyways, engineered fill, spillways, drains etc. must account for potential coal mining related seismic activity.

Specific Comments:

- 1-2 1. Page 3-102 of the SDEIS states that "design of project facilities would be based on maximum credible earthquake (MCE). Preliminary studies indicate that the appropriate MCE would be of magnitude 5.5. Further review of the appropriate MCE would be performed prior to final design of the dam."

The locations where the design criteria would be applied should be clarified and the criteria should be applied at the dam site and all ancillary facilities. The MCE should account for all forms of seismic activities as well as earthquakes. The FEIS should include the analysis that demonstrates that a 5.5 MCE would not cause piping or other damage to the dam or ancillary facilities.

- 1-3 2. Page 3-104: The discussion and analysis are incorrectly limited to "earthquake events." This section should address seismic events, including mining induced seismicity, as well as earthquakes.

Please direct any questions regarding this memorandum to Stan Perkes at the BLM Utah State Office, (801)-539-4036; e-mail: Stan_Perkes@blm.gov.

cc. Robert F Stewart
Regional Environmental Officer
Office of Environmental Policy and Compliance
P.O. Box 25007 D-108
Denver, CO 80225-0007

2. **U.S. ENVIRONMENTAL PROTECTION AGENCY, JAMES B. MARTIN,
REGION 8, REGIONAL ADMINISTRATOR TO U.S. ARMY CORPS OF
ENGINEERS**



ORIGINAL
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Ref: 8EPR-EP

JUL 06 2010

Colonel Thomas C. Chapman
District Commander
Sacramento District, U.S. Army Corps of Engineers
1325 J Street, Room 1480
Sacramento, CA 95814

Reply Date		
Date	Initials	Code
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Action:
Classification: **ENV - 6.00**
Project: **Narrows**
Control No: **10052.049**

Re: Action ID: SPK-1992-50255-00 11/28/16
Narrows Dam and Reservoir Project

2-1 Dear Colonel Chapman:

The U.S. Environmental Protection Agency (EPA) continues to have serious concerns regarding the direct, indirect, and cumulative impacts to Aquatic Resources of National Importance (ARNIs) resulting from the above referenced project. This letter follows our comment letter of June 8, 2010, and is sent in accordance with Part IV, 3(b) of the Memorandum of Agreement between the EPA and Department of the Army regarding Section 404(q) of the Clean Water Act (CWA), 33 U.S.C. §1344(q) (404(q) MOA). As discussed further below, the above referenced project will have substantial and unacceptable impacts to Aquatic Resources of National Importance.

EPA believes the proposed project will have substantial and unacceptable impacts to ARNIs due to the size, types and location of aquatic resources affected by the proposed project. The Narrows Dam and Reservoir Project will have unacceptable impacts to 89 acres of montane wetlands and five miles of cold water spring and stream systems associated with upper Gooseberry Creek, and, in addition, will affect lower Gooseberry Creek, Fish Creek, Scofield Reservoir, Price River, Green River and Colorado River due to reduced streamflows. Reduced streamflow below the diversion will lead to a 50-70% reduction in naturally-reproducing cutthroat trout biomass due to reduced habitat availability in Gooseberry Creek, and additional losses in aquatic habitat in the aforementioned streams. Potential water quality and aquatic life impacts exist downstream of Scofield Reservoir in the Price, Green and Colorado Rivers due to reduced releases from the reservoir under the proposed action, including cumulative effects on endangered species in the Green and Colorado Rivers¹.

¹ EPA previously determined the upper Colorado River to be an aquatic resource of national importance in a letter to the Corps regarding the Windy Gap Filling Project proposed in Colorado, December 24, 2008. The upper Colorado River provides a valuable habitat for many aquatic organisms, including four federally endangered fish species, and is a valuable commercial and recreational resource.

Fish and Gooseberry Creeks and associated wetlands, numerous high-yielding springs and tributaries are ARNIs. Lower Fish Creek and Gooseberry Creek are Class 3A (unique) under Utah water quality standards, and are “protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.” Class 3 streams support the majority of the stream fishing in Utah. These creeks maintain naturally-reproducing cutthroat trout fisheries and provide important spawning, nursery and unique habitat for these fishes. In addition to supporting a self-reproducing cutthroat trout population, Fish Creek also is used as spawning and rearing area by rainbow trout and is considered a Blue Ribbon Fishery in Utah. The tributaries of Gooseberry Creek, when flowing, are used extensively by cutthroat trout for spawning and rearing young-of-year fish.

These streams and their associated riparian wetland habitats represent rare aquatic ecosystems, as mountain riparian habitat comprises less than one percent of total land cover in the state. The riparian corridors of Fish and Gooseberry Creeks support extensive tracts of willow dominated habitat, and are regionally important for wildlife and support a diversity of neotropical migratory birds, including the largest breeding population of willow flycatchers, a federally endangered species, in the State. According to the Utah Comprehensive Wildlife Strategy, mountain riparian habitat is considered to be the most important habitat for overall vertebrate diversity and one of the most important to sensitive species in Utah. The U.S. Forest Service rated Fish Creek and Gooseberry Creek high on a regional scale of importance, noting the large amount of remote, undisturbed habitat, free of impoundments and human development. Diversions for water supply result in adverse impacts to montane riparian habitat, as it reduces the amount of water available for riparian vegetation and wildlife, alters natural hydrology, and reduces seasonal overbank flooding and subsequent riparian vegetation recruitment.

The rarity and uniqueness of this montane fish and wildlife habitat, the overall scope of resources affected by the proposed action, and the critical ecological functions support the ARNI designation. Streams and springs have been recognized as difficult-to-replace resources in the recent Compensatory Mitigation for Losses of Aquatic Resources Rule (Mitigation Rule)², highlighting the need for increased emphasis on avoidance and minimization requirements and compensatory mitigation for all unavoidable impacts (33 C.F.R. § 332.3(e)(3), and 40 CFR § 230.93(e)(3)). These high altitude streams support critical aquatic life and riparian wetland ecosystems, which provide water quality and wildlife habitat functions in a montane area that is still considered relatively remote and undisturbed.

EPA believes the proposed action fails to comply with the Clean Water Act Section 404(b)(1) Guidelines (Guidelines) (40 C.F.R. Part 230) due to potential availability of less environmentally damaging practicable alternatives, potential for the violation of state water quality standards, potential for the proposed action to cause or contribute to significant degradation to waters of the U.S. and lack of a detailed mitigation plan.

In our June 8, 2010 letter, EPA raised numerous issues concerning the information

² Compensatory Mitigation for Losses of Aquatic Resources; Final Rule; April 10, 2008; Department of Defense, Department of the Army, Corps of Engineers, 33 CFR Parts 325 and 332; Environmental Protection Agency, 40 CFR Part 230.

provided through the Public Notice, including: 1) the failure to adequately evaluate alternatives for impact avoidance and minimization requirements (40 C.F.R. § 230.10(a)), 2) the potential for the project to cause or contribute to the significant degradation of waters of the United States (40 C.F.R. § 230.10(c)), and 3) the lack of adequate mitigation to fully compensate for aquatic resource losses (40 C.F.R. § 230.10(d)). Additionally, according to the June 7, 2010 letter from the State of Utah to the Bureau of Reclamation, there are water quality and Endangered Species Act concerns that have not been adequately addressed. As such, the project proponent has not illustrated that the proposed action is in compliance with 40 C.F.R. § 230.10(b).

40 C.F.R. § 230.10(a) Alternatives Analysis

The inadequate analysis of alternatives in the Supplemental Draft Environmental Impact Statement (SDEIS) issued by the Bureau of Reclamation will result in substantial and unacceptable impacts to aquatic resource at the Narrows reservoir site because less environmentally damaging practicable alternatives may be available to the applicant. The action alternatives evaluated in the SDEIS are limited to providing storage in Gooseberry Narrows Reservoir at various storage capacities and screened alternatives based on “reasonableness” criteria pursuant to the National Environmental Policy Act. The alternatives need to be screened for “practicability” criteria under the Guidelines. Pursuant to the Guidelines, alternatives are considered practicable if they are available and capable of being done, taking into consideration cost, existing technology and logistics in light of overall project purpose. Other less environmentally damaging practicable alternatives may exist and alternatives for the multiple project purposes should be screened individually (i.e., agricultural versus municipal needs) to determine if a combination of alternatives may be practicable. In addition, EPA believes the project purpose is too narrowly defined in the SDEIS and that the Corps should independently evaluate the project purpose.

EPA believes there may be other less damaging practicable alternatives, both structural and non-structural, including 1) other water agriculture efficiency measures and transfers, 2) expansion of existing reservoirs, 3) construction of off-channel reservoirs, and 4) municipal conservation and reuse, which alone or in combination could meet the project purpose. For example, other potential reservoir storage projects and water supply alternatives such as off-channel reservoirs and aquifer storage and recovery options may be practicable and avoid substantial and unacceptable impacts at the Narrows Reservoir site.

40 C.F.R. § 230.10(c) Significant Degradation

Because the proposed action will inundate 89 acres of wetlands, multiple spring tributaries and 5 miles of cold water stream, as well as substantially reduce streamflows downstream of the impoundment, the combined influence of these direct and indirect effects will have substantial and unacceptable impacts on Gooseberry and Fish Creeks and associated aquatic resources. The direct and secondary impacts associated with the proposed action, in combination with past and present flow management in the Price River Drainage, will cause or contribute to significant degradation of the stream resources in the Price River Drainage, as well as the Green and Colorado Rivers, and will contribute to current water quality impairments and endangered

species issues in these waters. In addition, the proposed project will cause or contribute to significant degradation to Scofield Reservoir due to the reduced flows, and potentially result in an increase in phosphorus concentrations. Scofield Reservoir currently has a Total Maximum Daily Load (TMDL) in order to prevent algal blooms and fish kills in the reservoir.

In addition to dewatering effects in the Price River Drainage and downstream receiving Green and Colorado Rivers, the proposed transbasin diversion will also have significant effects in Cottonwood Creek due to flow augmentation. Increasing flows by 200% in Cottonwood Creek will have substantial effects on sediment transport and will likely lead to scouring and armoring of the stream channel and subsequent loss of habitat quality for vegetation, macro invertebrates and fish, including interstitial spaces for aquatic life refugia. Monitoring and mitigation need to be proposed to ensure that lost ecosystem functions in Cottonwood Creek are sufficiently mitigated.

40 C.F.R. § 230.10(d) Mitigation

The information on mitigation outlined in the Public Notice and SDEIS is not sufficient to determine compliance with the Guidelines (40 C.F.R. § 230.12). In accordance with the regulatory requirements found at 40 CFR § 230.10(c), sufficient compensatory mitigation is required to reduce the proposed impacts below a level of significance. With the information provided, we do not believe that adequate mitigation details have been provided to show that the applicant has offset these effects to aquatic resources. Additionally, due to the significance of adverse impacts, EPA requests that the applicant provide detailed cost estimates for the proposed mitigation to ensure that the proposed alternative is still practicable given the cost of that mitigation.

In order to comply with the Mitigation Rule, a compensatory mitigation plan must be submitted and approved by the Corps before the District Engineer can issue a CWA § 404 permit. This plan must address a number of critical details regarding the mitigation project including: clearly articulated project goals and objectives; project site selection criteria; site protection instruments (e.g., conservation easements); detailed quantitative and qualitative baseline information describing both the impact and compensation sites; a detailed discussion of the mitigation project's credit determination methodology and results; a maintenance plan; ecological performance standards used to evaluate the degree to which compensation projects are replacing lost functions and area; detailed monitoring requirements; a long-term management plan describing necessary long-term stewardship of the compensation sites and who is responsible for performing this stewardship; an adaptive management plan; and financial assurances to ensure project construction, implementation and long-term management.

The mitigation for proposed adverse impacts only provides cursory information on mitigation for wetland and stream impacts and does not include mitigation for the impacts to springs, which, along with streams, are considered difficult-to-replace resources under the mitigation rule. The ecological functions provided by the impacted wetlands, streams, springs and riparian areas must be appropriately characterized and replaced. The proposed mitigation plan fails to adequately compensate for the ARNIs in the project area due to the low likelihood

for ecological success and sustainability when considering the many site-specific mitigation issues on high altitude mitigation sites. Mitigation at high elevation is highly problematic as low night time temperatures and short growing season (due to typical late snow conditions) will greatly reduce and suppress plant growth and viability. To comply with the Guidelines, the applicant will need to provide a thorough analysis of the functions of the affected aquatic resources, indicate in the mitigation plan how these functions will be mitigated (e.g., a credit determination methodology and ecological performance standards) and identify opportunities to mitigate for these lost functions.


The Mitigation Rule's watershed approach also aims to maintain and improve the quality and quantity of wetlands and aquatic resources through strategic selection of compensatory mitigation sites (e.g. in this case, in the same watershed where the impacts occur). Additional mitigation options within the Price River watershed must be pursued to replace lost aquatic resource functions and values in the Price River watershed in order to comply with the Mitigation Rule.

A clear and detailed adaptive management plan is a key component of a mitigation plan for adverse impacts associated with this project. Because of the potential geographic scope of impacts due to reduced (and augmented) streamflows, and the subsequent risk for significant and potentially irreversible changes to aquatic ecosystems, an adaptive management plan that monitors the avoidance and minimization measures and requires compensatory mitigation for unavoidable adverse aquatic ecosystem effects is critical. This plan must include monitoring of specific water quality and aquatic life indicators, consider uncertainties associated with reasonably foreseeable actions, and outline necessary additional mitigation requirements (i.e., operational modifications, bypass flows, etc.), should mitigation prove unsuccessful. The adaptive management plan should also include long-term monitoring of stream geomorphology and sediment movement, as these potential effects will likely occur gradually and may not be detected for several years. In addition, this adaptive management plan should consider uncertainties associated with ecosystem changes due to climate change.

EPA continues to have serious concerns regarding the proposed project's lack of compliance with the requirements of CWA § 404(b) (1) Guidelines. Accordingly, without satisfactory resolution of these issues, EPA will continue to recommend denial of the permit for this proposed project. Your careful consideration of this matter is important for protecting the aquatic resources in Utah.

Thank you for your time and continued attention to this difficult matter. If you have any questions or concerns regarding these comments or recommendations, please contact the most knowledgeable person on my staff, Sarah Fowler (staff contact) at 303-312-6192, the Director of the Ecosystems Protection Program, Bert Garcia at 303-312-6670, or me at 303-312-6308.

Sincerely,


James B. Martin
Regional Administrator
Region 8

CC: Larry Crist, USFWS, Utah Field Office
John Harja, Public Lands Policy Coordination Office, State of Utah
Kerry Schwartz, Bureau of Reclamation, Provo Area Office
Tim Whitman, Corp of Engineers, Bountiful, Utah



3. **U.S. ENVIRONMENTAL PROTECTION AGENCY, LARRY SVOBODA,
REGION 8, DIRECTOR, NATIONAL ENVIRONMENTAL PROTECTION ACT
PROGRAM, OFFICE OF ECOSYSTEMS PROTECTION AND REMEDIATION**



ORIGINAL

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JUN 08 2010

Ref: 8EPR-N

Mr. Kerry Schwartz
Water and Environmental Resources Division
Manager, PRO-700
Bureau of Reclamation, Provo Area Office
302 East 1860 South
Provo, Utah 84606-7317

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Action:
Classification: E/NV 56.00
Project: NA
Comment No: 10042958
1122816

Re: Narrows Project Comments
SDEIS # 20100109

The U.S. Environmental Protection Agency, Region 8 (EPA) has reviewed the U.S. Bureau of Reclamation's Supplemental Draft Environmental Impact Statement (SDEIS) for the Narrows Project. EPA offers these comments in accordance with the Agency's responsibilities under the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C) and Section 309 of the Clean Air Act, 42 U.S.C. Section 7609.

Project Background

The Narrows Project is a new dam and reservoir on Gooseberry Creek, located on the Wasatch Plateau about 40 miles south southeast of Provo and 8 miles east of Fairview, Utah. The project will transfer water from Gooseberry Creek, a tributary to Scofield Reservoir and the Price River (Upper Colorado River Basin), to Cottonwood Creek, a tributary of the San Pitch River (Great Basin). The proposed project will deliver an annual average supply of 4,281 acre-feet of supplemental irrigation water and 855 acre-feet of water for municipal use to the Sanpete Water Conservancy District (SWCD). The water will be diverted through the existing Narrows Tunnel (which will be rehabilitated as part of this project) into a new 0.8 mile pipeline along Cottonwood Creek, eventually discharging into Cottonwood Creek. The diverted flow will be conveyed via Cottonwood Creek to two existing diversion dams. Two new irrigation pipelines (16 miles total) will convey the water to irrigation users in Sanpete County.

The SDEIS analyzes three alternatives: the proposed 17,000 acre-feet Narrows Project Dam and Reservoir, the mid-sized reservoir with a capacity of 12,450 acre-feet and the small reservoir with capacity of 7,900 acre-feet. Numerous mitigation measures have also been incorporated into the environmental analysis including wetlands restoration, minimum low stream flows in Gooseberry and Cottonwood Creeks, stream bank stabilization and flushing flows for Gooseberry Creek, fish habitat improvements and phosphorus removal measures to reduce the loading to Scofield Reservoir.

Comments on SDEIS

The Narrows Project has been under development for many years. The SDEIS is the third edition of the DEIS that EPA has reviewed over the years. In addition, EPA has reviewed several preliminary documents. As a result of these prior opportunities for review and comment, many of our previous concerns have been addressed in this SDEIS.

EPA's main overarching concern about this project has been and continues to be the significance of the project's environmental impacts. Specifically, the project is expected to result in the following impacts:

- Inundation of 1 mile of Upper Gooseberry Creek and 4.3 miles of small tributaries to Gooseberry Creek, a direct loss of 84 acres of high value montane wetlands;
- Direct impacts to 89 acres of waters of the U. S.;
- Inundation / flow modification of prized trout streams, including loss of important habitat for cutthroat trout;
- Reduction by 74% of annual flows on Middle Gooseberry Creek below the proposed reservoir and loss of spring flushing flows which maintain riparian habitat;
- Increase by approximately 200% of average flows on Cottonwood Creek in July and August; and
- Numerous impacts to Scofield Reservoir
 - o Reduction in operating levels (10% reduction in reservoir surface area) and storage releases to Price River area; increased probability of fish kills due to low water levels.
 - o Increase in trophic state towards eutrophication and increased phosphorus concentrations.
- Increased salinity in the Colorado River due to water depletion (increase of 0.54 mg/L, measured at Imperial Dam)

EPA comments on the SDEIS focus on the following four concerns:

- 3-1 - The need for more certainty regarding implementation of proposed mitigation measures to address the project's environmental impacts. We recommend that the FEIS provide more information on whether the proposed mitigation measures are required or are voluntary; and what will happen if the Sanpete Water Conservancy District (SWCD) is unable to implement the measures or if the measures are not completely successful.
- 3-2 - The need for more information to assess the potential effectiveness of the proposed mitigation measures to reduce phosphorus loadings to Scofield Reservoir to decrease the chance of fish kills. Further, more details should be presented on adaptive management and potential additional mitigation measures that may be needed to achieve loading reductions.
- Coordination of the NEPA environmental review with the application for a Clean Water Act § 404 permit for the discharge of dredged or fill material into waters of the United States associated with the project. The SWCD has applied to the U.S. Army Corps of

Engineers (USACE) for the CWA § 404 permit needed to construct the Narrows Project. The public notice process for the CWA § 404 permit ends shortly after the comment period for the SDEIS. EPA will provide separate comments on the draft CWA § 404 permit.

- 3-3 – The lack of disclosure of the cost of the proposed project to SWCD water users and taxpayers in Sanpete County.

These issues are discussed in more detail in the enclosed detailed comments, along with several recommendations to improve the disclosure of impacts in the FEIS.

Through the years, numerous mitigation measures have been developed for the project to reduce the environmental impacts of the proposed dam, reservoir, pipelines and transmountain division of water. Although, EPA is pleased to see all of the mitigation measures incorporated into the environmental analysis, we continue to be concerned by the inundation of 89 acres (for the proposed action) of wetlands and the riparian areas of Gooseberry Creek and its tributaries by the reservoir. The proposed project will potentially exacerbate the eutrophication problem in Scofield Reservoir, and the effectiveness of proposed mitigation to reduce phosphorus loadings is unknown. We therefore, continue to rate the project as "Environmental Objections" (EO) because of these impacts. The changes and new information added to this SDEIS addressed much of the information requested in our comment letter on the DEIS dated May 7, 1998. However, as discussed above and in the detailed comments, there are several areas of the environmental analysis that warrant development of additional information. We therefore are rating the document as a "EO-2", (Environmental Objections"- Insufficient Information). A description of EPA's EIS rating system is also enclosed.

Thank you for considering our input. We would like to schedule a phone call with the Bureau of Reclamation to discuss the concerns raised in this letter. If you have any questions regarding our comments, please call me (303) 312-6004 or you may contact Dana Allen of my staff at (303) 312-6870.

Sincerely,



Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection and Remediation

cc: Peter Crookston, Reclamation
Tim Witman, USACE

**EPA's Detailed Comments on the
Narrows Project
Draft Supplemental Environmental Impact Statement (SDEIS)
June 2010**

Implementation of Mitigation Measures

- 3-4 1. Section 2.2.2 (page 2-8) lists 11 fish and wildlife mitigation measures. We anticipate that the measures associated with the wetlands mitigation project(s) will be incorporated into the requirements of the CWA § 404 permit from the Army Corps of Engineers. For the rest of these measures and other mitigation measures discussed throughout the EIS, it is unclear if the measures will be required. Appendix F provides more details on the mechanics of implementation and the intent for SWCD to enter into memorandums of agreement (MOA) with the Utah Department of Wildlife Resources (UDWR), Forest Service and other parties for implementation and maintenance of the wildlife mitigation measures. Many successful mitigation measures have been implemented through agreements or other voluntary arrangements; however, it is important to disclose the voluntary nature of the mitigation in the FEIS.

For example, in Appendix F, page F-2, #11, states that SWCD will fund and construct all 11 wildlife mitigation measures concurrently with the construction of other project facilities such as the dam. How will these conditions be implemented? For example, will the loan for the project be contingent on construction of these mitigation measures? Number 11 also states that the SWCD will be responsible for funding monitoring of the mitigation measures as outlined in the future MOA. The agency or organization charged with monitoring and maintaining the proposed mitigation will also be determined in the future MOA. Will the Bureau of Reclamation or any other governmental entity have the ability to require SWCD to fund, monitor or otherwise maintain the wildlife mitigation measures?

- 3-5 2. The FEIS should also describe how the flow mitigation measures were developed to offset reduced stream flows. For example, are the low flow requirements conditions of water right agreements or compacts? Are there specific chemical, physical or biological metrics that need to be met through the flow mitigation measures?

Will there be any commitments to monitor the effectiveness of minimum low flows, flushing flows, etc? What will happen if the low flows are not sufficient to meet the biological needs of the fishery? The FEIS should include summaries of the future mitigation plans including more details on how the watersheds will be monitored for successful implementation and what kinds of adaptive management provisions will be developed for long-term success.

- 3-6 3. Strict mitigation success criteria must be set for the streambank restoration and wetland mitigation. As part of the criteria, a long-term inspection program should be put into place to assure that the measures remain vital. The text of the SDEIS provides an example of why an inspection program is vital (pages S-16 and 3-50). The phosphorus loading reduction project funded under CWA § 319 appeared to be working, but now the

landowners are no longer excluding livestock from the stream. In order to assure long term viability of the mitigation and attendant water quality improvements, the mitigation must be maintained and inspected regularly.

Phosphorus Loadings and Mitigation

- 3-7 4. The existing 2000 total maximum daily load (TMDL) for Scofield Reservoir identifies total phosphorus and consequent low dissolved oxygen (DO) as pollutants of concern that have contributed to impairment of the cold water species beneficial use. The TMDL called for a reduction in the total phosphorus load (by 1,881 kg/yr); however, it is unclear whether this load reduction has been achieved. Further, the 2006 eutrophication study indicated a small projected increase in the phosphorus concentration in Scofield as a result of the proposed project (due to changes in loading and reduced flow from Fish Creek).

Water quality concerns regarding the phosphorus loading and potential changes (as a result of the proposed project) in Scofield Reservoir highlight the need for more current water quality data. With the exception of the eutrophication study (which included data for the period 1978-2005), it appears that the most of the data used in the SDEIS are almost 10 years old (or older). For example, is the streambank restoration work accomplished under the CWA § 319 and 314 programs for phosphorus reduction reflected in the water quality data?

- 3-8 There is clearly a need for more current data to characterize “current” conditions, to establish a baseline to measure mitigation success, and to update the evaluation in the 2000 TMDL. We recommend that a water quality monitoring program be developed and implemented as part of preparing the FEIS and for evaluating the success of proposed mitigation measures. The first sets of data should be used to verify existing water quality conditions in Scofield Reservoir and its tributaries in the FEIS. The long-term water quality monitoring program would be used to verify the success or failure of the proposed mitigation measures to reduce phosphorus loading and to update the TMDL for Scofield Reservoir.
- 3-9 5. The FEIS should more specifically define the phosphorus reduction goal for the proposed mitigation measures to reduce the phosphorus loading to Scofield reservoir. The monitoring plan discussed above (and potentially the proposed TMDL revision) should be used to identify a specific loading to be removed or a percent reduction. The current TMDL recommends a 28% reduction, however it is not clear how or where that reduction would be measured. The proposed monitoring program should define the specific measurements and monitoring locations that will be used to evaluate the effectiveness of (1) narrowing and improving fish habitat on Gooseberry Creek between the Narrows and Lower Gooseberry Reservoirs, and (2) fencing out livestock and stabilizing stream segments for 9.5 miles of stream segments tributary to Scofield reservoir (Table 3-13 on page 3-44 and page 3-60) to reduce external phosphorus loading. An adaptive management plan should be included in the monitoring program to define further mitigation should it be necessary to achieve loading reductions.

Costs of Narrows Project to Sanpete County Water User and Taxpayers

- 3-10 6. The construction cost of the Narrows Project is estimated at around \$40 million (Table 2-5, page 3-31). We recommend that the FEIS include information on the cost of the project to residents of Sanpete County. It appears that the SWCD is funded through property taxes and water use fees to irrigators and municipalities; however it is unclear how the proposed project will increase mill levies and user fees. We understand that the final financial arrangements are unknown, so we recommend that the section address a range of potential costs and likely funding sources. The cost estimate should also include operations and maintenance of the Narrows Project and associated mitigation measures.
- 3-11 7. We recommend expanding the information regarding the Small Reclamation Project Act (SRPA) in Section 2.1 of the SDEIS to explain the connection between requirements of the SRPA, future legislation authorizing the loan and the cost of the project to Sanpete County taxpayers and water users.

For example, on page 2-2, the second bullet in the first column states "Loan repayment must use 100% of the project's irrigation amortization capacity . . ." Will this condition affect the user rate structure or does this condition only apply in evaluating potential project alternatives?

Wetlands, Coordination with the 404 Permit

- 3-12 8. We recommend that the wetlands and mitigation sections in the FEIS be updated to reflect any changes or decisions that have been made as part of the CWA § 404 permit process.
- 3-13 9. We recommend that wetlands mitigation opportunities be identified along Fish Creek or Gooseberry Creek upstream of Scofield Reservoir. In addition to increasing the acres of wetlands mitigation, this type of mitigation will also help reduce discharges of phosphorus and sediment.
- 3-14 10. We recommend improving coordination between the NEPA and the CWA § 404 permit processes. Are there any off-channel reservoir sites that could be considered a "least environmentally damaging practicable alternative" (LEDPA) under the 404 permit regulations? Appendix B lists possible reservoir sites, but they all appear to be on channel, and potentially as environmentally damaging as the preferred alternative. We understand that selecting a reservoir site other than the Narrows site may require the renegotiation of the 1984 Compromise Agreement, however this renegotiation is not a basis for determining that an alternative is not practicable. We recommend that the FEIS include more information about the "practicability" issues of other potential reservoir sites. For example, how would the cost of pumping affect user fees? Would the project still be affordable for some users?
- 3-15

The SDEIS also infers that some of the funding sources are linked to the fish and wildlife mitigation measures. Would these funding sources still be available if the reservoir was located at one of the other sites?

- 3-16 11. We recommend that the BOR require more than the current mitigation ratio of slightly higher than 1:1. While a 1:1 ratio may be appropriate for wetland creation, for restoration mitigation we recommend a minimum ratio of 2:1.

Other Comments

- 3-17 12. We recommend that the FEIS disclose potential impacts from the conversion of Narrows Project water from irrigation to residential development. For example, will the new residential development impact any resources of concern?
- 3-18 13. As described in the SDEIS, water from the Narrows Project will be increasingly used for municipal water supply. Although there are no specific water use data for Sanpete County, it is anticipated that water consumption will be similar to the rest of Utah with a use of 270 to 281 gallons per capita per day (pages 1-7 & 1-9). Water use is very high in Utah due to outdoor irrigation; only about 70 gallons per capita per day will be used inside the home. We recommend that mitigation measures be developed to reduce residential consumption of water such as those described in "Utah's M&I Water Conservation Plan, Investing in the Future", July 2003. We also recommend that the mitigation plan incorporate some of the concepts of sustainable communities such as: preserving agricultural land, mixed-use developments or cluster developments reducing irrigated landscaping and preserving unirrigated open space. These types of development have an added bonus of reducing infrastructure costs.

4. U.S. FISH AND WILDLIFE SERVICE, AMY DEFREESE, UTAH FIELD SUPERVISOR



United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

June 2, 2010

In Reply Refer To
FWS/R6
ES/UT
10-FA-0007

To: Bureau of Reclamation, PRO-774, 302 East 1860 South, Provo, Utah 84606-7317 (Attn: Peter Crookston)

From: *fw* Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, Utah

Subject: Narrows Project Supplemental Draft Environmental Impact Statement, Sanpete County, Utah DES-09-55

We received your letter, dated March 29, 2010, requesting review and comment to the supplemental draft environmental impact statement (SDEIS) for the Narrows Project. The Sanpete County Water Conservancy District (SWCD) proposes to dam and divert 5,400 acre-feet of water annually from the Gooseberry Creek drainage in the Colorado River Basin to northern Sanpete County in the Sevier River drainage basin. Project components include:

- Construction of the Narrows Dam and Reservoir on Gooseberry Creek;
- Rehabilitation of the Narrows Tunnel to convey water from the Narrows Reservoir to the Upper Cottonwood Creek Pipeline;
- Construction of the upper Cottonwood Creek Pipeline to carry project water from the Narrows Tunnel outlet to Cottonwood Creek;
- Construction of the Oak Creek Pipeline to convey water from Cottonwood Creek to the community of Fairview;
- Construction of the East Bench Pipeline to convey project water from Cottonwood Creek to project service areas south of Fairview;
- Relocation of SR-264;
- Modification of Forest Development Road Nos. 50124, 50150, and 50225;
- Modification of the snowmobile parking area along FDR No. 50150; and,
- Construction of recreation facilities at the Narrows Reservoir.

Pursuant to the National Environmental Policy Act (NEPA), the Migratory Bird Treaty Act (MBTA), the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), and the Fish and Wildlife Act of 1956, we provide the following comments for your consideration.

General Comments

The Narrows Project has a long history in Utah. We completed our Fish and Wildlife Coordination Act (FWCA) report for the Narrows Project in 1994, and we completed consultation under Section 7 of the Endangered Species Act for this project in 2000. There has been little communication or official correspondence between the Bureau of Reclamation (Reclamation) and our office since scoping was conducted for this SDEIS in 2003. While the majority of project features remain the same, we have new information about other resources that may be affected. We also developed updated best management practices for migratory birds, including raptors, to ensure compliance with the MBTA and Bald and Golden Eagle Protection Act (BGEPA). Below, we present these issues for your consideration.

Greater sage-grouse

4-1 On February 26, 2008, we published a notice to initiate a status review for the greater sage-grouse. On March 4, 2010, we found that the greater sage-grouse is warranted, but precluded from listing under the ESA (50 CFR Part 17). It is therefore a Candidate species for future action. The Narrows dam and reservoir is proposed within potential greater sage-grouse brood rearing habitat. We recommend that you require SWCD to conduct surveys for suitable habitat and develop appropriate avoidance and minimization measures for this species in coordination with our office and the Utah Division of Wildlife Resources (UDWR). Guidelines to minimize impacts to sage grouse, including seasonal and spatial buffers and habitat restoration recommendations, can be found in the UDWR's *Utah Greater Sage-grouse Management Plan, 2009*, Publication No. 09-17 and in *Guidelines to Manage Sage Grouse Populations and their Habitats* (Connely et al. 2000). In the FEIS, you should disclose whether habitat for greater sage-grouse exists within the project area and include measures to avoid, minimize and mitigate impacts to this species.

Updated Resource Status

According to the Utah Comprehensive Wildlife Conservation Strategy (UDWR 2005), mountain riparian habitat is very rare in Utah, comprising less than 1 percent of total land cover in the state. It is the most important habitat for overall vertebrate biodiversity and one of the most important to sensitive species in Utah. Because mountain riparian habitat is such a high priority habitat, UDWR identifies it as a "key" habitat for its value to wildlife. Only 10 of the 25 habitat types in Utah are key habitats. The UDWR documents specific threats to this habitat type including stream channelization from increased water velocity, lack of riparian vegetation and increased sedimentation. It also describes water development as a threat to mountain riparian habitat, specifically as it leads to a reduction in the amount of water available for riparian vegetation and wildlife, a lack of natural hydrological events, such as seasonal overbank flooding, and the impairment of riparian vegetation recruitment.

The Manti-La Sal National Forest described the unique attributes of Fish Creek and Gooseberry Creek in its determination of eligibility for these systems under the Wild & Scenic Rivers Act (U.S. Forest Service, Manti-La Sal National Forest 2003). Both creeks are regionally important for wildlife and support a diversity of neotropical migratory birds, including the largest breeding population of willow flycatchers known in the State. The corridors support extensive tracts of willow dominated habitat at least 100 meters wide and more than 500 meters long. The U.S. Forest Service rated Fish Creek and

Gooseberry Creek high on a regional scale of importance, noting the large amount of remote, undisturbed habitat, free of impoundments and human development.

- 4-2 In summary, mountain riparian habitat, specifically that encompassing Fish Creek and Gooseberry Creek, is critical to wildlife, rare in Utah and under increasing threat to its persistence. We recommend that you include this information in the FEIS and ensure that it is considered when evaluating direct, indirect and cumulative effects of the proposed project. You should also use this information to ensure that the applicant implements sufficient mitigation to minimize adverse impacts and compensate for the loss of these resources.

Migratory Birds, including Raptors

- 4-3 The environmental analysis should specifically assess potential impacts to migratory birds and establish measures to avoid and minimize impacts to birds. The MBTA prohibits the take of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, issued on January 11, 2001, affirmed the responsibilities of Federal agencies to comply with the MBTA. To ensure construction activities do not result in the "take" of an active nest or migratory bird protected under the MBTA, we recommend that SWCD:

- a. Conduct necessary vegetation clearing and surface disturbing activities outside critical breeding, nesting, and fledging seasons;
- b. Minimize temporary and long-term habitat loss; and,
- c. Mitigate for unavoidable habitat loss.

- 4-5 Your evaluation of short- and long-term impacts to migratory bird habitat should focus on species on the U.S. Fish and Wildlife Service 2008 List of Birds of Conservation Concern and species that are listed as Partners in Flight Priority Species. Species on these lists are considered high conservation priorities.

We recommend the use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck 2002) to provide consistent application of raptor protection measures and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Guidelines to ensure that proposed projects will avoid adverse impacts to raptors. Locations of existing raptor nests should be identified prior to the initiation of project activities. Appropriate spatial buffer zones of inactivity should be established during crucial breeding and nesting periods relative to raptor nest sites or territories. Arrival at nesting sites can occur as early as December for certain raptor species. Nesting and fledging can continue through August.

4-6

Project Components

The SDEIS environmental analysis focuses primarily on the direct and indirect effects of dam and reservoir construction. The assessment of affected environment, predicted effects and appropriate mitigation measures should include an analysis of all project features. We recommend that you disclose and analyze environmental effects for the following project features where construction will result in habitat modification:

- 4-7 • Rehabilitation of the Narrows Tunnel to convey water from the Narrows Reservoir to the Upper Cottonwood Creek Pipeline;
- 4-8 • Construction of the upper Cottonwood Creek Pipeline to carry project water from the Narrows Tunnel outlet to Cottonwood Creek;
- Construction of the Oak Creek Pipeline to convey water from Cottonwood Creek to the community of Fairview;
- Construction of the East Bench Pipeline to convey project water from Cottonwood Creek to project service areas south of Fairview;
- Relocation of SR-264;
- Modification of Forest Development Road Nos. 50124, 50150, and 50225;
- Modification of the snowmobile parking area along FDR No. 50150; and,
- Construction of recreation facilities at the Narrows Reservoir.

Best Management Practices

- 4-9 To ensure that SWCD minimizes impacts to sensitive environmental resources during and after construction, we recommend that you identify best management practices in the FEIS. For example, where the Oak Creek and East Bench Pipelines will cross perennial streams, SWCD should use dry crossing methods, construct temporary equipment crossings that do not obstruct flow, and implement proper erosion control measures. The FEIS should also specifically identify measures to avoid and minimize impacts to greater sage-grouse, mountain riparian habitat, and migratory birds and their habitats. We recommend that Reclamation communicate with our office prior to finalizing the SDEIS to ensure that wildlife concerns are addressed.

Specific Comments

Page 1-25, Section 1.7 Environmental Issues Associated with the Proposed Action Alternative – Climate Change

- 4-10 We recommend that you strengthen the analysis for Issue No. 20, which describes how you will address the role of climate change. We believe that it is not only possible, but necessary and appropriate to conduct a meaningful climate change analysis for a small water development project. At a minimum, you can describe and discuss how climate change will generally affect water resources in the Colorado River basin based on a number of recent publications from sources such as the Rocky Mountain Climate Organization, the U.S. Forest Service Rocky Mountain Research Station, and the Southwest Climate Change Initiative for the Nature Conservancy. More specifically, the assessment should evaluate changes for average, wet and dry year stream flows under warming conditions. While there may be nuances and uncertainty surrounding the predictions, it is reasonable to select a range of scenarios that represent the potential changes in temperature and precipitation. Based on those representative scenarios, you should evaluate the implications to resources considered in your SDEIS.

Page 2-4, Section 2.2.2.1 Proposed Action Alternative, Water Supply and Use

Table 2-1 in Section 2.2.2 indicates that the balance between M&I and irrigation water will change as the demand for M&I use increases (M&I use will increase, and irrigation use will decrease). The

- 4-11 implication is that the demand for irrigation water will decrease or that SWCD will sacrifice irrigation water for M&I use. The purpose and need for the project, and the selection of alternatives, is therefore confusing to the reader. Specifically, we do not understand the ultimate use of project water and at what point in the future irrigation water users will relinquish water to the M&I sector. If SWCD anticipates a decline in irrigation water demand in the future, you should articulate how existing irrigation water rights could be used for M&I purposes as an alternative to the proposed project. We believe this may be a feasible alternative to the proposed action that could accomplish the purpose and need, and minimize environmental effects.

Page 3-1, Section 3.1.1 Threatened and Endangered Species, Affected Environment

- 4-12 Please note that the bald eagle (*Haliaeetus leucocephalus*) was removed from the federal list of endangered and threatened species. While bald eagles no longer are provided protection under the ESA, they are still protected under the Bald and Golden Eagle Protection Act (BGEPA) in addition to the Migratory Bird Treaty Act. The potential presence of nesting or wintering eagles in the project area should be evaluated to ensure compliance with the BGEPA and MBTA.
- 4-13 Greater sage-grouse is a Candidate species under the ESA. The Narrows dam and reservoir is proposed within potential greater sage-grouse brood rearing habitat. We recommend that you include a discussion of this species in Section 3.1.1; predicted project effects and conservation measures should be included in Section 3.1.3.

4-14 **Page 3-3, Section 3.1.1.1 Conservation Species, Affected Environment**

Columbia spotted frog (*Rana luteiventris*) is a state-sensitive species managed under an interagency Conservation Agreement, to which Reclamation is a signatory. We recommend that you coordinate with UDWR to determine if the data in the SDEIS reflect current conditions. Based on an evaluation of habitat within the project area, the FEIS should identify best management practices to minimize impacts to the species. Survey protocols, results, and proposals for minimization and compensatory mitigation measures should be coordinated with UDWR and our office.

4-15 **Page 3-6, Section 3.1.4 Conservation Species Impacts**

We disagree that the proposed project will not affect bluehead sucker (*Catostomus discobolus*) and flannelmouth sucker (*Catostomus latipinnis*). The SDEIS identifies that both species exist in the Price River below the Farnham Diversion Dam, approximately 3 miles southeast of Wellington, Utah in Carbon County. Based on the evaluation of current and predicted average streamflow in the Price River at Woodside (approximately 15 miles downstream of Wellington), it appears that peak flows in May and June will decrease by 18 and 28 percent post-project. The effect of reduced peak flow to bluehead sucker and flannel-mouth sucker should be fully assessed in the FEIS. You should coordinate your analysis with UDWR and our office.

4-16 **Page 3-8, Section 3.2.3.2 Wildlife, Predicted Effects, Proposed Action Alternative**

Table 3-1 provides acreage, Habitat Suitability Index (HSI) and Habitat Unit (HU) figures for five

- 4-17 species under the proposed action. We recommend that you describe how the proposed mitigation measures address losses in acreage, HSI and HU. It is also unclear if the conversion of upland habitat to wetland habitat was considered in your analysis of project impacts and under your proposals for wetland mitigation. We recommend that you include an evaluation of upland conversions in this section.
- Page 3-8, Section 3.2.3.2 Wildlife, Predicted Effects, Proposed Action Alternative**
- 4-18 The acquisition of conservation easements around the Narrows Reservoir is proposed to compensate for loss of mule deer and Brewer's sparrow habitat. We recommend that you identify who will hold those conservation easements and what activities will be precluded.
- Page 3-9, Section 3.2.3.2 Wildlife, Predicted Effects, Proposed Action Alternative**
- We request to review the wildlife mitigation and monitoring program, referenced in this section prior to the publication of the FEIS. We can provide recommendations to ensure that it meets commitments reflected in the Fish and Wildlife Coordination Act Report.
- 4-19 **Page 3-11, Section 3.3.2 Water Resources, Methodology and Impact Indicators**
- Please update the flow data in this section to include the years after 2002. The use of all available flow data will more accurately represent average, wet and dry years.
- 4-20 **Page 3-12, Section 3.3.3.2 Water Resources, Proposed Action Alternative**
- The analysis of Lower Gooseberry Creek and Fish Creek is limited to reductions in flow during spring snowmelt. We recommend that you also identify and analyze the effect of reduced flow during the late summer and fall when baseflow is important for macro-invertebrates, fish mobility and the ability of fish to compete with non-native species. Based on Table 3-2, it appears that flows in Lower Gooseberry Creek, for example, will be reduced by 39 and 29 percent in September and October of an average year.
- 4-21 **Page 3-12, Section 3.3.3.2 Water Resources, Proposed Action Alternative**
- You determined that the effect of reduced inflow to Lower Gooseberry Reservoir would be negligible. To ensure that the reader understands the rationale in the FEIS, please provide a more thorough explanation of project effects to the existing Lower Gooseberry Reservoir. We believe that reduced upstream flow will affect the size and habitat quality of the reservoir and associated wetlands.
- 4-22 **Page 3-14, Section 3.3.3.2 Water Resources, Predicted Effects, Proposed Action Alternative**
- In Table 3.2 for the Price River below Scofield Dam, it appears that flow in an average year will be reduced by 100 percent in May, yet flows in a dry year will remain the same. If correct, this data is not intuitive. We recommend that you provide an explanation of this data in the text of the FEIS.

4-23 Page 3-16, Section 3.3.3.2 Water Resources, Predicted Effects, Proposed Action Alternative

The analysis of impacts to the Price River concluded that the project will primarily reduce volume and frequency of spills from Scofield Reservoir. To clarify the effect on downstream channel morphology and wildlife species, you should provide additional data and analysis to identify how flows may change in seasonal terms such as peak flow or base flow. Figures 3-2 and 3-3 are not sufficiently detailed to help the reader make that determination.

4-24 Page 3-23, Section 3.4.1 Fisheries, Affected Environment

The current effect of Fairview Lakes operation on the flows in Gooseberry Creek and Fish Creek is not clearly described in this section. To inform a better understanding of current fishery conditions, this section should be strengthened with additional information about the Fairview Lakes system. In addition, the rationale for a new operating agreement between SWCD and CGIC should be described, particularly how it may affect the fishery.

4-25 Page 3-25, Section 3.4.1.1 Fisheries, Affected Environment, Gooseberry Creek

It is unclear which species of cutthroat trout may exist in waters affected by the project. Please clarify throughout the FEIS.

4-26 Page 3-35, Section 3.4.1.7 Fisheries, Affected Environment, Scofield Reservoir

The Utah Legislature passed House Bill 38 in 2001 which provided funding for Governor Leavitt's Blue Ribbon Initiative in Utah. Blue Ribbon Fisheries are high quality aquatic systems that produce healthy fish populations for angling and aesthetic experience. They are to be managed principally by protecting their watersheds, maintaining and restoring habitat, and implementing appropriate angling regulations. The Blue Ribbon Advisory Council recommends that these waters, their ecosystems and the fishery be given protective legal status. Scofield Reservoir and Lower Fish Creek between the Highway 6 Bridge and Scofield Dam are Blue Ribbon Fisheries. This information should be disclosed under Affected Environment in this section, and the effects of the project to these Blue Ribbon Fisheries should be fully assessed.

4-27 Page, 3-35, Section 3.4.2 Fisheries, Methodology and Impact Indicators

It is unclear whether the pre-1994 data used to evaluate the standing crop of cutthroat trout and weighted usable area (WUA) reflects existing conditions. The data should be verified with the UDWR to ensure that the mitigation proposals adequately compensate for the resource that exists in 2010.

4-28 Page 3-36, Section 3.4.3.2 Fisheries, Predicted Effects, Proposed Action Alternative

Section 3.4 should evaluate project effects to the fishery in Lower Fish Creek below Scofield Reservoir. Flows in this segment will not be directly affected by the project, but will be indirectly affected by changes in the operation of Scofield Reservoir. Specifically, May and June flows will be reduced by 100 and 41 percent respectively under project conditions in an average year. We recommend that you

disclose and analyze the effect of these flow reductions to the fishery in this segment.

4-29 Page 3-36, Section 3.4.3.2 Fisheries, Predicted Effects, Proposed Action Alternative

Because there will be a reduction in flow in sections of the Price River as far downstream as Woodside, we recommend that you disclose and analyze the effects of the project to all fish species that may occur between Scofield Reservoir and the Green River including brown, rainbow and Yellowstone cutthroat trout.

4-30 Page 3-36, Section 3.4.3.2 Fisheries, Predicted Effects, Proposed Action Alternative

The description of the proposed alternative states that an increase in flow between 160 – 200 percent in Cottonwood Creek will not change stream channel stability because base flow will always be lower than peak flow. We do not agree with this conclusion and recommend that you provide additional information to support this assessment or that you further analyze and disclose how the stream channel will change.

4-31 Page 3-36, Section 3.4.3.2 Fisheries, Predicted Effects, Proposed Action Alternative

The SDEIS discloses that it will take 1-15 years to initially fill the Narrows Reservoir depending on hydrologic conditions in the basin. To ensure that impacts to downstream resources are fully mitigated, we recommend that SWCD maintain base flows during this period to reflect their commitment for post-construction flow.

4-32 Page 3-37, Section 3.4.3.2.2 Fisheries, Predicted Effects, Proposed Action, Lower Gooseberry Creek

This section concludes that the project will not affect cutthroat trout spawning habitat because the fish does not spawn in this segment. It appears that data are at least 16 years old. We recommend that you verify the absence of spawning cutthroat trout using updated data because monthly flow reductions in this segment range between 8 – 62 percent from April to August. In addition, we do not believe that this section of the SDEIS reflects applicant commitments in the FWCA Report where we documented that SWCD will mitigate for a decrease of 142 Habitat Units in Lower Gooseberry Creek.

4-33 Page 3-39, Section 3.4.2.2.4 Fisheries, Predicted Effects, Proposed Action, Cottonwood Creek

The SWCD will provide increased winter flows to mitigate for project impacts to the fishery in Cottonwood Creek. We recommend that you clarify this statement to reflect SWCD's commitment to augment winter flow by 2 cfs from the end of one irrigation season to the beginning of the next, as described in the FWCA Report. Other references to this mitigation commitment in the FEIS should be more specific as well to avoid confusion.

4-34 Page 3-62, Section 3.6.1 Wetland Resources, Affected Environment

It does not appear that all direct and indirect wetland impacts from project features have been considered

in the SDEIS. The SDEIS evaluates wetland impacts from only the proposed dam and reservoir. In the FEIS, we recommend that you identify wetland resources and project impacts that result from other project features, including the East Bench Pipeline and Oak Creek Pipeline, as well as the relocation of SR-264, modification of Forest Development Roads, the snowmobile parking area, and the construction of recreation facilities at the proposed Reservoir.

4-35 Page 3-62, Section 3.6.1 Wetland Resources, Affected Environment

In the SDEIS, you state that the wetlands within the project area are not unique to the area. As we described on page 2 of this letter, mountain riparian habitat is very rare in Utah, comprising less than 1 percent of total land cover in the state. The Manti-La Sal National Forest manages a significant portion of mountain riparian habitat in this area. They describe Fish Creek and Gooseberry Creek as regionally important for wildlife, noting that these creeks support a large amount of remote, undisturbed habitat, free of impoundments and human development. Please update the FEIS accordingly.

4-36 Page 3-65, Section 3.6.3.2 Wetland Resources, Predicted Effects, Proposed Action Alternative

The analysis of effects to riparian wetlands downstream of the proposed Narrows Reservoir concludes that there will be no adverse effect on riparian and wetland vegetation adjacent to Middle Gooseberry Creek because the stream will be manually narrowed to maintain the depth of flow. We are not familiar with this mitigation technique and cannot concur that it will produce the same type, quantity and quality of wetland resources that exist there today. In addition, we believe that additional ground disturbance downstream of the Narrows dam may introduce non-native species, produce erosion and sedimentation, and further degrade the system. Under Section 404 of the Clean Water Act, it is likely that the Corps of Engineers will require SWCD to monitor the site for many years to ensure that it returns to pre-construction conditions. We recommend that you evaluate the environmental cost of narrowing the stream by hand and determine whether the short-term benefit is worth that cost.

4-37 Page 3-65, Section 3.6.3.2 Wetland Resources, Predicted Effects, Proposed Action Alternative

This section should identify and evaluate project effects to wetland resources and riparian habitats along Lower Gooseberry Creek and Fish Creek above Scofield Reservoir. On page 3-5 in Section 3.1.3.2, you state that reduced flows to Fish Creek may affect the Southwestern willow flycatcher through reduction in availability of tall, thick stands of willows and reduction of standing water and saturated soils. We recommend that you expand on this information to ensure that project effects are adequately analyzed and mitigated.

We also recommend that you disclose all of the relevant conclusions in hydrologic and vegetation studies performed by Mussetter Engineering, Inc. and Mt. Nebo Scientific. Both entities make conclusions that indicate an expectation for change to the riparian wetland willow community riparian to Lower Goose Creek and Fish Creek above Scofield Reservoir. These changes should be evaluated and minimized to the extent possible. In his Riparian Vegetation Study, Patrick Collins provides a number of management options that could minimize the effect of the project to this resource. We recommend that you disclose these options in the FEIS and propose minimization measures based on these options.

4-38 Page 3-66, Section 3.6.4.2 Wetland Resources, Alternative Mitigation – Area West of Lower Gooseberry Reservoir

To create wetlands at the Cabin Hollow alternative mitigation site, SWCD proposes to use an existing open ditch to transport surface water across uplands to the site. We believe that the wetland hydrology goal should be to utilize self-sustaining, natural hydrologic processes that require little or no long-term maintenance. Water sources for wetland mitigation should originate on-site to ensure long-term persistence. SWCD also proposes to graze the site. Depending on how grazing is managed, it may impair the function of wetlands. We recommend that you eliminate this mitigation alternative unless you can demonstrate a local, self-sustaining water source and a grazing plan that will not impair wetland function.

4-39 Page 3-67, Section 3.6.4.4 Wetland Resources, Alternative Mitigation – Manti Meadows

To mitigate for wetlands inundated by the proposed Narrows Reservoir, SWCD proposes an alternative to mitigate at Manti Meadows in the San Pitch River drainage. We believe that compensatory wetland mitigation should occur within the same watershed where impacts occur. Therefore, we recommend that you eliminate this mitigation alternative from the suite under consideration.

4-40 Page 3-71, Section 3.7.3.2 Vegetation, Predicted Affects, Proposed Action Alternative

It is unclear if and how changes in flow regimes may affect riparian wetland communities and whether SWCD can operate the dam releases to minimize effects. Ultimately, it is important to understand how riparian wetland communities may change as a result of the project so that we can appropriately monitor and mitigate those effects. At this time, we cannot agree that riparian wetland vegetation will be minimally affected. We also cannot agree that it is appropriate to manually narrow the wetted channel in the Middle Gooseberry Creek segment to compensate for potential impacts to riparian wetland communities. We recommend that you reference the hydrologic and vegetation studies as an appendix to the FEIS and better describe your rationale and conclusions in the text of the document. We also recommend that you coordinate with UDWR and our office to ensure that impacts to riparian wetland habitat are fully analyzed and mitigated.

Page 3-112, Section 3.21.1 Cumulative Resource Issues

The Cumulative Effects analysis should be supplemented to better document and evaluate:

- 4-41** • The cumulative effect of the project to sensitive species in Utah including migratory birds, greater sage-grouse, Columbia spotted frog, bluehead sucker, and flannelmouth sucker;
- 4-42** • The cumulative effect of the project to mountain riparian systems within the Colorado River basin and San Pitch River Basin;
- 4-43** • The cumulative effect of the project to water quality in Scofield Reservoir and the Price River;
- 4-44** • Existing conditions and trends in the persistence and sustainability of natural resources, including sensitive species and habitat;
- Reasonably foreseeable future actions; and,

4-45

- Thresholds for the assessment of resource degradation now and in the future.

Significant information is available that documents the status of sensitive species and their habitats in Utah. For example, in the Utah Comprehensive Wildlife Conservation Strategy (2005), the Utah Division of Natural Resources (DNR) described the ten most at risk habitat types found in Utah and ranked each by the degree of threat it faces due to various stressors. Conservation Agreements prepared for individual wildlife species such as Columbia spotted frog document trends in the persistence of species as well as the factors contributing to trends. Because greater sage-grouse was recently reviewed for listing under ESA, we conducted a thorough analysis of population trends and factors affecting those trends. You can find our decision for greater sage-grouse in the Federal Register at:

http://www.fws.gov/nevada/nv_species/documents/sage_grouse/032310_gsg_fed_reg.pdf.

For surface water and riparian resources, you should reference state water quality documents that assess the condition of Scofield Reservoir and the Price River. This information should be disclosed in the cumulative effects analysis.

These resources can also help identify thresholds for environmental resources. For example, a threshold for water quality can be extrapolated based on the current level of impairment identified in state water quality documents.

Summary Comments

In the seven years since Reclamation conducted scoping for this project, we have updated the status of various trust resources under our jurisdiction. The UDWR and USFWS also developed best management practices for some of these resources.

We request that you continue to coordinate with our office prior to finalization of the EIS to ensure that all wildlife resources are considered in your impact analysis and mitigation proposals. We also wish to reiterate our FWCA Report recommendation that we review detailed mitigation plans prior to finalization of the EIS.

We appreciate the opportunity to provide these comments. Should you have any questions or need any further information please contact Amy Defreese, Ecologist, at (801)975-3330 ext. 134.



cc: UDWR – Salt Lake City (Attn: Carmen Bailey)
UDWR – Price (Leroy Meade)
USEPA – Denver (Attn: Dana Allen)
USFS – Price (Attn: Pam Brown)
USFS – Price (Attn: Bob Davidson)

References

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. *Wildlife Society Bulletin* 28(4): 967-985.

Romin, L.A., and J.A. Muck. 2002. U.S. Fish and Wildlife Service. Utah field office guidelines for raptor protection from human and land use disturbances.

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U.S. Forest Service, Manti-La Sal National Forest. March, 2003. Final eligibility of wild & scenic rivers – Manti La Sal National Forest.

Utah Division of Wildlife Resources. 2005. Utah comprehensive wildlife conservation strategy. Publication Number 05-19.

Utah Governor's Office of Planning & Budget. Winter, 2007. Utah data guide, p.4.

5. U.S. FOREST SERVICE, MICHAEL DAVIS, ENVIRONMENTAL COORDINATOR, MANTI-LASAL NATIONAL FOREST

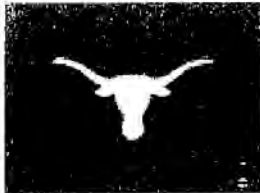
Crookston, Peter L

From: Michael Davis [michaeldavis@fs.fed.us]
Sent: Tuesday, June 01, 2010 5:34 PM
To: PRO NarrowsEIS
Subject: Comments on the Draft SEIS from the Manti - La Sal National Forest

A pdf file with the compiled comments from the Manti - La Sal is available for down load from our ftp site. If you are unable to retrieve our comments please contact me as soon as possible and I will forward you a CD with the pdf file.

<ftp://ftp2.fs.fed.us/incoming/mantilasal/NarrowsProject/>

Thank you



Michael Davis
Environmental Coordinator
Manti-La Sal National Forest
Email - michaeldavis@fs.fed.us
Office: 435.636.3550
Cell: 435.650.4820
"Hook 'em Horns"

EXECUTIVE SUMMARY

Narrows Project Supplemental Draft Environmental Impact Statement

S1.0 INTRODUCTION

The Narrows Project Supplemental Draft Environmental Impact Statement (SDEIS) updates information and analyses contained in the *Draft Environmental Impact Statement, Narrows Project* (DES-98-10) published in March 1998 (1998 DEIS). The SDEIS discloses the direct, indirect, and cumulative effects of the Proposed Action and alternative actions for water development for northern Sanpete County. This is an executive summary of the SDEIS.

S1.1 THE PROPOSED ACTION ALTERNATIVE

The Sanpete Water Conservancy District (SWCD) has applied to the Bureau of Reclamation (Reclamation) for a Small Reclamation Projects Act (SRPA) loan to help finance construction of a reservoir and related facilities (Proposed Action). SWCD also has requested authorization to use federally administered withdrawn lands as the site for dam construction. Most of the reservoir basin would be located on adjacent, privately owned land. If Reclamation approves the SRPA loan and land use and Congress appropriates the necessary funds, a supplemental water supply would be developed for presently irrigated lands and municipal and industrial (M&I) water users in northern Sanpete County. A dam and reservoir would be constructed on Gooseberry Creek, and water would be

diverted through an existing tunnel and a proposed pipeline to Cottonwood Creek; the existing tunnel would be rehabilitated. Pipelines would be constructed to deliver the water to existing water distribution systems. Recreation facilities would be developed, and a 2,500-acre-foot minimum pool for fish habitat would be provided. The resulting water storage and delivery system would be a non-Federal project owned and operated by SWCD.

Mitigation measures would be implemented to offset adverse impacts. Additional water conservation measures would be required independent of the Proposed Action. To be eligible to receive water from the Narrows Project, water users would be required to use, or agree to implement, conservation measures.

S1.2 LEAD AND COOPERATING AGENCIES

Reclamation is the lead agency in preparing the SDEIS. The two cooperating agencies are the U.S. Department of Agriculture Forest Service (USDA Forest Service) and the U.S. Army Corps of Engineers (USACE).

S1.3 HISTORY AND BACKGROUND OF THE NARROWS PROJECT

The Narrows Project, as defined in this document, is a non-Federal project that

Page: S-1

Author: michaeldavis Subject: Sticky Note Date: 5/28/2010 12:14:35 PM

Ann King, Water - La Jolla
Public Services Group Leader
Comments on the Narrows Project

Question: Many times mitigation is dependent on available funding. Is there any indication that the SWCD will be able to afford the land purchases they mentioned to implement the mitigation? It seems that costs of land will go up.

Statement: It seems that this document has bullet proofed many of the objections from the past. Again, I'm concerned that the costs have gone up for the various mitigation actions and that they may not be able to implement all of them. If that is the case, there would be objections in many areas.

Statement: There were evaluations of social effects to Sanpete County if this project were not to take place but not Carbon County (drinking water). I realize it has been legally determined that the water is Sanpete's, but shouldn't you still show effects.

The cost for building the recreation sites seems very low. They would need at least 10 toilets at \$20,000 a piece, some sort of tank for holding water or a water system that would cost approximately \$300,000, fencing around the campground to keep cows out and fencing around the reservoir shore to protect the "new wetlands" and prevent motorized travel to the shores (around \$300,000), trails leading to Skyline, and around the reservoir for motorized travel (probably in the neighborhood of several hundred thousand dollars) the cost for the facilities and interpretive information they would need to add the cost of gravel or cement padding for the facilities (tables, fire rings, pathways to facilities). It just seems that the cost of developing a facility this size would cost more than that estimated. The question is: Will this be part of the loan or does SWCD come up with the funds AND can they apply for additional funds? Question: If this campsite is turned into a fee area, would the forest service retain those fees for operation of the site - would SWCD retain the fees?

Author: michaeldavis Subject: Sticky Note Date: 5/28/2010 12:14:35 PM

Rod Player -

Here are a couple of concerns:

Much of the Fish and Wildlife data is more than 20 years old which leads me to wonder if it is still valid.

Proposed mitigations on National Forest System lands would require additional site specific NEPA analysis. For example improving riparian areas in Poncha, Upper Fish Creek would require site specific NEPA. SWCD needs to fund this analysis and implementation. I fear that because additional NEPA is required SWCD will opt to have mitigations at locations off of the National Forest. From the beginning the Forest has maintained that mitigations should be "in place and in kind". While some of the proposed mitigations meet this criterion many do not.

Question: Many times mitigation is dependent on available funding. Is there any indication that the SWCD will be able to afford the land purchases they mentioned to implement the mitigation. It seems that costs of land will go up.

Statement: It seems that this document has bullet proofed many of the objections from the past. Again, I'm concerned that the costs have gone up for the various mitigation actions and that they may not be able to implement all of them. If that is the case, there would be objections in many areas.

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Author: michaeldavis Subject: Sticky Note Date: 5/28/2010 12:14:35 PM

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Narrows Project
Supplemental Draft EIS

would not be built. The existing Narrows Tunnel would be rehabilitated at some future date with other funding. The Cottonwood Creek Irrigation Company could not risk complete collapse and failure of the tunnel. If the tunnel were to collapse, the Cottonwood Creek Irrigation Company would have to acquire some type of emergency funding and would be required to repair it. The demand on municipal water supplies in Fairview, Mount Pleasant, Spring City, and Moroni would continue to increase as supplies for outdoor municipal uses run short and as the population increased. Most likely, there would be a conversion of agricultural water to municipal use as the demand for municipal water increased with a growing population.

Water conservation measures would continue to be implemented. These conservation measures would reduce average shortages on irrigated farmland to about 29.5% or about 15,250 acre-feet per year. Implementing new conservation measures most likely would reduce irrigation return flows now supplying wetlands, aquatic habitat, and downstream users by an estimated 3,500 acre-feet per year.

There would be no wetlands, wildlife, or fisheries mitigation measures implemented under the No Action Alternative because there would be no impact to existing wetlands and wildlife habitat. Streamflows in Gooseberry and Fish Creeks would remain unaltered from their present state. Under this alternative, no flatwater fishery would be developed in the proposed reservoir basin.

S2.1.2 Proposed Action Alternative

If Reclamation approves the SRPA loan and Congress appropriates the necessary funds and lands, a supplemental water supply would be developed for municipal water users and agricultural use in north Sanpete County

under the Proposed Action. This additional water supply would satisfy the 1984 Compromise Agreement.

The Proposed Action would provide north Sanpete County an average annual supply of 4,281 acre-feet of supplemental irrigation water for 15,420 acres of presently irrigated farmland and 855 acre-feet of water for municipal use. The project would include construction of the 17,000 acre-foot Narrows Dam and Reservoir on Gooseberry Creek, pipelines to deliver the water to existing water distribution systems, rehabilitation of the existing 3,100 foot Narrows Tunnel, and relocation of 2.9 miles of State Road (SR) 264. The dam would be 120 feet high with a crest length of 550 feet and crest width of 30 feet.

The Narrows portion of the Gooseberry Project Plan would include a transmountain diversion of water from the Gooseberry Creek drainage of the Price-Green-Colorado River Basins to the San Pitch-Sevier River of the Great Basin. Geographically, the project facilities are located in close proximity to the drainage divide between the Price River system and the San Pitch River system. The general location is shown on the location map in the front of this document.

The Price River flows southeast to the Green River, a tributary of the Colorado River. The San Pitch River flows southwest to the Sevier River, which is completely consumed in the Bonneville Basin, a part of the arid Great Basin. The county line dividing Sanpete County and Carbon County is located more than 6 miles downstream from and about 3 miles east of the proposed Narrows damsite on Gooseberry Creek.

The proposed damsite, the transmountain Narrows Tunnel, and the project water distribution facilities are all located in Sanpete County. The source of the project water supply generally arises in Sanpete

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Author: karmynolds Subject: Enforcement Test Date: 4/23/2010 9:00:09 AM
The existing Narrows Tunnel, managed by the Cottonwood Creek Irrigation Company, would be rehabilitated at some future date with other funding, because the Cottonwood Creek Irrigation Company could not risk complete collapse and failure of the tunnel.
Author: karmynolds Subject: Inverted Text Date: 4/23/2010 9:34:15 AM
Paragraph break

The existing Narrows Tunnel, managed by the Cottonwood Creek Irrigation Company, would be rehabilitated at some future date with other funding, because the Cottonwood Creek Irrigation Company could not risk complete collapse and failure of the tunnel.

Paragraph break

Author: Narrows Subject: Limited Text Date: 4/23/2009 9:42:31 AM
Why is agency dead?

Author: Narrows Subject: Comments on Text Date: 4/23/2010 10:51:15 AM
This document is 16 years old. Was it reviewed to see if all of the information was still accurate and pertinent?

reference to the SWWF. The Service concluded, however, that the project and associated depletion of water from the Colorado River system may affect the four endangered Colorado River fishes. While the opinion concluded that the proposed project may affect the four endangered fishes, it also stated that the project is not likely to jeopardize their continued existence, provided measures are implemented to offset project impacts (i.e., payment of a one-time financial contribution by SWCD).

S3.2 WILDLIFE

The wildlife species found in the general project area are common in the Great Basin Desert valleys and Rocky Mountain Range. There are about 364 species of terrestrial vertebrates that may inhabit the project area. Approximately 38 bird species and 33 mammal species use the habitats that would be disturbed by the proposed project.

Table 3-1 summarizes the impacts to wildlife habitat that would result from construction of the Proposed Action. In an assumed worst-case situation where the most habitat would be lost at one time, it would take the reservoir 2 years to fill to capacity. The 1994 *Fish and Wildlife Coordination Act Report* evaluates the impacts of the proposed Narrows Project on fish and wildlife resources and recommends appropriate mitigation (see appendix D).

A wildlife mitigation program has been designed to provide at least full mitigation for each impacted species. Because the wetland and upland wildlife mitigation measures are intended to provide full mitigation for project impacts, there would be no residual impacts.

S3.3 WATER RESOURCES

Gooseberry Creek and its three unnamed tributaries are located high in the Price River drainage. This tributary of Fish Creek flows directly into Scofield Reservoir (see the location map at the front of this document). Other tributaries to Scofield Reservoir include Mud Creek and Pondtown Creek. The Price River, which flows out of Scofield Reservoir, is a tributary of the Green River—a tributary of the Colorado River. These three rivers are all located in the Colorado River Basin.

Cottonwood Creek, located in the San Pitch River Basin, is located on the opposite side of the divide from Gooseberry Creek.

Cottonwood Creek and the San Pitch River are located in the Sevier River subbasin of the Great Basin.

Typical of Wasatch Mountain streams, flows in these creeks are greatest in the spring, when snowmelt runoff is peaking. Peak flows during May and June are estimated to range from 1.5 to over 100 cubic feet per second (cfs) in Upper Gooseberry Creek near the proposed damsite. The flow declines considerably in late summer and reaches a minimum in late fall or winter. Late-season flows are estimated to be 1.5 to 5 cfs in Upper Gooseberry Creek.

The average annual natural runoff volume of Upper Gooseberry Creek, near the proposed damsite, is 9,032 acre-feet. Of this amount, an average of 1,815 acre-feet presently is stored in Fairview Lakes and diverted transmountain to Cottonwood Creek through the Narrows Tunnel. The remaining water continues down Gooseberry Creek to Fish Creek. An average of 35,800 acre-feet per year enters Scofield Reservoir from Fish Creek. The total annual inflow to Scofield

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This document is 16 years old. Was it reviewed to see if all of the information was still accurate and pertinent?

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Reservoir from all tributaries averages 57,500 acre-feet. The average total contents of Scofield Reservoir are about 42,360 acre-feet. All of these values are for the 1960–2002 hydrologic period.

The Price River below Scofield Reservoir, referred to as lower Fish Creek, has a wide range of flows that vary according to downstream water demands and hydrologic conditions. Releases consist of direct flow right bypasses and Scofield Reservoir storage deliveries for Scofield Project users. Spills occur when the reservoir is full and water flows over the spillway or when releases are made in excess of downstream demands. These total releases and spills have averaged 51,815 acre-feet for 1960–2002 but historically have varied from 13,762 to 154,475 acre-feet. Low flow conditions generally occur from November through March. There are no minimum flow requirements in the Price River, and it is not unusual for the flow below the dam to be completely shut off during winter months. Peak flows below the dam occur in wet years when the reservoir spills. While normal dam releases in June are about 150 cfs, the total releases with these spills have ranged up to more than 1,100 cfs. Since spills are in excess of downstream consumptive use requirements, they usually increase right flows throughout the lower Price River to the confluence with the Green River. From 1960 to 2002, the reservoir filled and spilled 37 times. This indicates that, on the average, the reservoir historically has spilled about every 2 to 3 years.

About 25 miles downstream from Scofield Reservoir near the small community of Heiser, the average annual flow of the Price River is about 81,000 acre-feet based on 1935–81 data. Within 5 miles of Heiser, numerous diversions from the river occur. The largest diversion is the head of the Carbon and Price-Wellington Canals, located

about 1.5 miles south of Spring Glen. Except during high water conditions when the flow of the river exceeds the capacity of the canals, the river essentially is dry below this diversion. In addition to irrigation water, winter flows also are diverted for stockwatering.

Irrigation return flows in this area discharge back to the river, and the flow of the river increases after passing through the Price-Wellington area. Near its confluence with the Green River, the average annual flow of the river is 94,929 acre-feet, based on 1960–92 records. The stream gauging station on the Price River at Woodside was discontinued in September 1992 and removed in July 2000.

As mentioned previously, Cottonwood Creek, located in the San Pitch River Basin, has typical flow conditions as compared with other streams in the area with one noted exception. After spring runoff flows subside in late May or early June, natural flows are supplemented with releases from Fairview Lakes. These releases are made through an existing transmountain tunnel. Flows from Fairview Lakes are used by the Cottonwood-Gooseberry Irrigation Company as a source of supplemental irrigation water in the Fairview area. These supplemental releases generally occur in July and August. The historic average annual flow volumes at the tunnel outlet and the mouth of Cottonwood Creek have been 2,655 and 8,600 acre-feet, respectively.

Operation of the Narrowa Project would affect streamflows in Gooseberry Creek, Fish Creek, Price River, Green River, Colorado River, Cottonwood Creek, and about 3 miles of the San Pitch River. Table 3-2 provides a comparison of average monthly streamflows under the four project alternatives evaluated. Monthly streamflow data were used to develop this table because reliable daily streamflow data were not available.

Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:59:40 AM
Why does this information not include more recent data?		
Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:57:29 AM
Why does this information not include more recent data? This data is 8 years old.		
Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:56:40 AM
Yes, what does the data from 2000 to 2010 say?		
Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:55:10 AM
Again, same comment as above, this information should include all recent data that's available.		
Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:53:46 AM
What years of data is this statement summarizing?		
Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:52:44 AM
Again, same comment about recent info.		
Author: [redacted]	Subject: Comments on Text	Date: 4/22/2010 8:51:46 AM
This data is 30 years old!		

What data is this statement based on? From what years?

Why does this information not include more recent data? This data is 8 years old.

So, what does the data from 2000 to 2010 say? Again, same comment as above, this information should include all recent data that's available.

What years of data is this statement summarizing?

Again, same comment about recent info.

This data is 30 years old!

S-11

The impacts of the Narrows Project on water resources are most pronounced near the reservoir. About 1 mile of Upper Gooseberry Creek and 4.3 miles of small streams in the proposed reservoir basin would be inundated by the reservoir. In addition, annual flows in the middle 3 miles of Gooseberry Creek between Narrows Reservoir and inflow into Lower Gooseberry Reservoir would be reduced by about 74%. Under the Proposed Action, a 1.0-cfs minimum flow would be made from Narrows Reservoir to Gooseberry Creek to provide a 1.5-cfs minimum flow at the USDA Forest Service campground ¼ mile downstream from the proposed dam site. If the 1.5-cfs flow at the campground is not met, up to an additional 0.25 cfs would be released from the reservoir to meet the required flow. Minimum streamflow releases from Narrows Reservoir would eliminate periodic dry stream channels in the Middle Gooseberry Creek segment. An average of 300 acre-feet per year also would be released for channel maintenance or other streamflow purposes.

Depletions in the Pricer River drainage would average 5,597 acre-feet per year. This amount would consist of 5,227 acre-feet of transbasin diversions and 370 acre-feet of increased evaporation in the Pricer River Basin. When measured in Gooseberry Creek below Narrows Reservoir, the reduction in annual streamflow varies between 1,760 and 10,200 acre-feet, depending on the storage level of Narrows Reservoir and the magnitude of the streamflow into the reservoir. As shown in table 3-2, the greatest impact would occur during the spring snowmelt runoff period. Releases from Narrows Reservoir to Gooseberry Creek would remain at a minimum of 1.0 cfs, and when the reservoir is spilling or when flushing releases are made, the flow would be greater.

H-35

would be about 753 acre-feet per year. Total depletions to the Price River drainage would average 5,587 acre-feet per year. Both the volume and frequency of spills from the reservoir would be reduced. The average reservoir surface area would be reduced from 2,370 acres in the No Action Alternative to about 2,125 acres. This is about a 10% reduction or about 245 acres of the surface area of the No Action Alternative.

Since Scofield Reservoir would operate at a lower level, there is an increased potential for the reservoir to be drained to the bottom of its active storage. The frequency of this occurrence increases from 3 times in 43 years for the No Action Alternative to 12 times in 43 years with the Proposed Action.

During most years, controlled releases from Scofield Reservoir to meet Scofield Project demands would remain unaltered.

In summary, the residual impacts (after mitigation) of the Proposed Action include the inundation of 1.0 mile of Gooseberry Creek and 4.3 miles of unnamed tributaries. Flows in Gooseberry Creek below Narrows Reservoir, Fish Creek, and the Price River would be reduced as shown in table 3-2. The flow in Cottonwood Creek below the confluence with Left Hand Fork would be increased during the nonrunoff portions of the irrigation season. Scofield Reservoir would operate at a lower level in most years, and reductions in storage releases to irrigators in the Price area would occur only after several successive years of drought but would average about 753 acre-feet per year. However, on the average, these reductions would be about 1,500 acre-feet less than those that would have occurred if Scofield Reservoir had not been enlarged to accommodate the Gooseberry Project (Narrows Project).

S3.4 FISHERIES

Most of the Narrows Project alternatives have the potential to affect aquatic resources in Gooseberry Creek, Fish Creek, three unnamed headwater tributaries to Gooseberry Creek, Cottonwood Creek, Lower Gooseberry Reservoir, Fairview Lakes, and Scofield Reservoir (see the location map). Cottonwood Creek is in the San Pitch River Basin, whereas all of the others are in the Price River drainage. Cottonwood Creek flows into the San Pitch River downstream from Fairview, Utah; but the San Pitch River, within the project area, does not support a sport fishery because of low summer flows.

Flows in Gooseberry Creek, its unnamed tributaries, and Cottonwood Creek presently are affected by the operation of Fairview Lakes, which store water during spring runoff. Water from the lakes is delivered during the irrigation season via one of the unnamed tributary streams and a canal to the Narrows Tunnel that discharges into Cottonwood Creek. The released water then is diverted for irrigation in Sanpete County.

Lower Gooseberry Creek and Fish Creek downstream from the confluence with Gooseberry Creek also are affected by the operation and limited regulation offered by Fairview Lakes. If the project is approved, an operating agreement would have to be negotiated between SWCD and Cottonwood-Gooseberry Irrigation Company (CGIC) to regulate seasonal releases from Fairview Lakes in connection with downstream discharges from the Narrows Reservoir.

Aquatic resources vary considerably between the different reservoirs and stream segments that could be affected by the Narrows Project. Fish habitat study reaches are shown in figures 3-4.

5-9

Wouldn't this also include reductions to the municipal water supply for Helper and Price?

5-10

Tracker: OpenTable Subject: Executive Summary Date: 4/21/2019 10:44:55 AM
This would be a cumulative negative impact to stream aquatic resources.

The State Engineer stipulates that a minimum of 1.0 cfs is to be released downstream from the proposed Narrows Dam; and, if the flow is not 1.5 cfs at the Gooseberry campground, SWCD is required to release 1.25 cfs from the dam. It also is stipulated that the dam be constructed with a multiple-level outlet to regulate water temperature for the trout located downstream from the dam.

The proposed project would cause flow reductions in Gooseberry and Fish Creeks as shown in table 3-2. Flows in Middle Gooseberry Creek immediately downstream from the proposed dam would be expected to be reduced on average by 74%, whereas flows downstream from Lower Gooseberry Reservoir would be expected to be reduced by 43%. In Fish Creek, flows would be expected to be reduced approximately 13%.

The 5,400-acre-foot diversion of project water into Cottonwood Creek would cause about a 200% increase in the base summer flow in Upper Cottonwood Creek (table 3-2). As shown, the base summer flows in Lower Cottonwood Creek would be increased by about 160%. However, the increased flows would occur only during the July-to-October period and not during the peak runoff or the low flow months (November–April). Additionally, these base summer flows would be less than the peak flows that currently shape the stream channel. Therefore, the stream channel itself would remain stable.

Providing a 2.0-cfs winter release through the Narrows Tunnel is expected to greatly increase the weighted usable area (WUA) for all fish species in Cottonwood Creek. This increased flow particularly would benefit the upper reaches of the creek and would be expected to facilitate the overwintering of fish.

The length of time required initially to fill Narrows Reservoir would, of course, depend on hydrologic conditions in the basin. During

wet years, the reservoir could fill during a single spring runoff. For more normal conditions, if no diversions were made to Cottonwood Creek until the reservoir filled, it likely would fill in 2 years—almost certainly within 3 years. Under dry conditions, if diversions to Cottonwood Creek did occur during the filling period, it could take 5 to 15 years to fill Narrows Reservoir. Due to these hydrologic uncertainties, there is no firm filling schedule for the reservoir.

At maximum storage, the proposed Narrows Reservoir would inundate about 1 mile of Upper Gooseberry Creek and approximately 4.3 miles of the three headwater tributaries with permanent flows that join to form Gooseberry Creek.

Based on the stream habitat that would be inundated by the proposed reservoir, it is expected that 1.3 and 2.1 acres of stream-based aquatic habitat would be lost in Gooseberry Creek and the tributaries, respectively. Using the standing crop estimator, approximately 230 pounds of stream-based cutthroat trout would be lost, of which 22% would occur in Gooseberry Creek and 78% would occur in the tributary streams, although the trout biomass likely would be converted into a flat-water equivalent.

The Utah Division of Wildlife Resources (UDWR) does not recognize the creation of a reservoir fishery as adequate compensation for the loss of stream aquatic resources. Creating an additional reservoir fishery would compensate for adverse effects that may occur on Lower Gooseberry Reservoir and Scofield Reservoir. This would represent a cumulative beneficial project impact to reservoir fishery.

In summary, the Proposed Action would result in loss of cutthroat trout stream habitat attributable to reservoir inundation and flow alteration. The project also would result in more reservoir habitat for cutthroat trout. The

, but would be a cumulatively negative impact to stream aquatic resources.

5-11

Public Comments Subject Comments Text Date 6/23/2016 11:40 AM
 Can't find any more recent data? This is almost 30 years old.

concern about nutrient loading of Lower Gooseberry Reservoir and its effect upon DO levels in the reservoir. The oxygen depletion of the reservoir during the winter is believed to result from low winter inflows combined with decomposition of organic material resulting from the extensive macrophyte growth during the summer, as mentioned above.

S3.5.3 Scofield Reservoir

Recent studies indicate that Scofield Reservoir is mesotrophic in its present state. Data collected in 1990 and 1991 depict the reservoir as hypereutrophic, while data in 1992 after treatment and eradication of trash fish indicate a moderately eutrophic system. Data collected between 1995 and 2003 indicate a mesotrophic system (State of Utah, Department of Environmental Quality, Division of Water Quality, 2006). Eutrophication is a term applied to the organic degradation of a body of water and is associated with elevated levels of carbon, nitrogen, phosphorus, and other inorganic nutrients. The degree of eutrophication generally is exhibited by the growth and appearance of large colonies of algae in highly eutrophic waters, coupled with a green cast or color to the water. This generally occurs during the warm summer months.

Trophic State Index (TSI) is a general measure of the level of eutrophication in a reservoir. The Carlson TSI is determined using measures of secchi depth, chlorophyll, and phosphorus (Carlson, 1977). TSI values greater than 50 are indicative of a eutrophic system, and TSI values between 40-50 are indicative of a mesotrophic system. The average TSI value for Scofield Reservoir of 53.3 (for 1979-80) was reported by UDEQ in a report entitled *Scofield Reservoir Restoration Through Phosphorus Control*. For the period 1981-2007 the average TSI value was computed to be 47.1 (see figure 3-5).

The water quality of Scofield Reservoir is considered fair. Average constituent levels of the reservoir and its tributaries are listed in table 3-15. The average detention time is about 1.4 years. The maximum depth is 66 feet, and the mean depth is 26 feet. The shallow areas with water less than about 15 feet deep normally are covered with extensive macrophyte growth, although these are normally submergent. This adds to the oxygen deficit problem during parts of the year.

The principal pollutants are nutrients, sediments, and trace elements associated with erosion and mining and nonpoint sources such as construction of roads and mine portals, domestic waste disposal, animal grazing, and natural deposits of rock containing phosphates.

Several independent water quality studies of Scofield Reservoir (listed in the "Bibliography") show that phosphorus is the limiting nutrient. This means that all available phosphorus is used up in producing algae or other cell bodies, while there remains a surplus of carbon, nitrogen, and other nutrients. Thus, without the input of additional phosphorus into the system, no additional algal cells can form. About 53% of the phosphorus loading to Scofield Reservoir enters from Fish Creek, according to a 1983 Utah Department of Health study. Indications are that the source of most of the phosphorus consists of naturally occurring, phosphorus-laden soils in the upper watershed.

Fish kills in Scofield Reservoir have been reported during 14 of the 46 years from 1960-2005. These fish kills are minor and generally occur in late summer. They are an indicator of water quality problems with low DO levels being the most probable cause of the fish dying.

In 1984, UDEQ received a Clean Lakes Phase II grant pursuant to the Clean Water Act, Section 314, to rehabilitate Scofield Reservoir through a program to reduce total phosphorus loading to the reservoir. UDEQ had concluded that

"the most pragmatic and effective means to control the further eutrophication of Scofield Reservoir, or possibly to effect a moderate reversal of the eutrophication process, appears to be a reduction of the phosphorus load to the lake."

The restoration project consisted of installing stream revegetments and checkdams, revegetation of degraded streambanks, replacing water diversion systems for irrigation, providing a fish cleaning station, and developing a public awareness and education program to alert people of the pollution problem and solicit their support in reducing phosphorus loads to the reservoir. Streambank rehabilitation activities occurred on segments of Mud Creek and Fish Creek. The overall streambank work was designed to reduce stream sediments and erosion through streambank stabilization and revegetation of degraded soils in highly eroded areas.

A postproject monitoring program indicated that the project was initially effective. Streambank stabilization and revegetation occurred in the project area. Visual observations indicated that sediments were being removed from the streams. Although there is insufficient empirical data to conclusively support the effects of the implementation effort, the data indicated a decline in total phosphorus concentrations. However, many aspects of the project were voluntary on the part of the landowners. Since the project completion, many of the project measures have not been maintained. In particular, one aspect included fencing Mud Creek to prevent cattle from entering the stream, damaging the streambanks, and defecating in the stream. This was initially

effective, but the landowners currently keep the gates open, thus allowing cattle access to the stream.

Utah Division of Water Quality officials believe that the presence of "rough fish," such as carp and suckers, also contribute to the water quality problems in Scofield Reservoir. These fish feed on the reservoir bottom and stir up sediments. This agitation could increase the internal phosphorus loading of the reservoir. In critical water quality years, removal of these fish species might improve the water quality of the reservoir. For example, 1992 was a critical year for Scofield Reservoir operation. Reservoir levels were extremely low, and fish kills were anticipated. However, a fish eradication program was conducted the previous year that killed the undesirable fish. No fish kills were observed in 1992 even though water levels were critically low.

In 2000, the Utah Department of Water Quality submitted, and the U.S. Environmental Protection Agency (EPA) approved, a phosphorus total maximum daily load (TMDL) for Scofield Reservoir (State of Utah, Department of Environmental Quality, Division of Water Quality, 2000). The TMDL identifies total phosphorus and DO as pollutants of concern, which have attributed to the impairment Scofield Reservoir's Class 3A beneficial use for cold water species of game fish. The TMDL focuses on total phosphorus as the pollutant of concern because low DO is linked to high phosphorus levels. The loading assessment quantified the current total phosphorus load to the reservoir at 6,723 kilograms per year (kg/year). The TMDL identified three endpoints to improve reservoir water quality:

1. Shift in phytoplankton dominance from blue-green algae

Wouldn't this also include reductions to the municipal water supply for Helper and Price?

2. DO level of no less than 4.0 mg/L in 50% of water column
3. TSI values between 40 and 50

These endpoints are to be met by reducing the total phosphorus load to the reservoir by 1,881 kg/yr.

S3.5.4 Colorado River Salinity

At its headwaters in the mountains of north-central Colorado, the Colorado River has a salinity concentration of 50 mg/L. As a tributary to the Colorado River, the Price River contributes to the salinity load of the river system. The concentration progressively increases downstream as a result of water diversions and salt contributions from a variety of sources. Near Yuma, Arizona, the Imperial Dam, built in the 1930s, diverts Colorado River water into three different canals and holds the river water until it can be directed into a desilting plant. Annual salinity concentrations at Imperial Dam are expected to decrease from the 1987 measured average level of 850 mg/L to an estimated average of 779 mg/L by the year 2025, assuming continuing successful implementation of the salinity control program.

Water in the Price River suffers major quality deterioration as the stream crosses the irrigated sectors of the river basin. The deterioration results from both geologic and human factors. From about November–April, little water is released from Scofield Reservoir, and the upper portion of the basin contributes little water to the river. During this period, irrigation return flow is not significantly diluted by better quality water. Although major releases are made from Scofield Reservoir from May–October, a large part of the flow is diverted during this period into major irrigation canals in the upstream part of the basin. Significant

amounts of irrigation return flow of poor quality enter the river downstream from points where most of the flow is diverted from the river.

Accordingly, during most of the year, the flow in Price River in the central basin is composed of relatively small amounts of good quality water from the upper basin and variable amounts of irrigation return flow and natural flow from tributaries that drain the marine shales. This increases the TDS level from about 300 mg/L to about 2,000 mg/L as measured above and below the areas of principal use. Although some deterioration in the chemical quality of the Price River probably would occur in the absence of stream regulation and irrigated agriculture in the central basin, deterioration is intensified with the presence of both.

S3.5.5 Cottonwood Creek and San Pitch River

As indicated above, Cottonwood Creek has good water quality and generally meets all of its present beneficial use classifications. The San Pitch River is also generally good quality water above Fairview. However, the San Pitch River degrades downstream since most of the water is diverted; and near Moroni, the river is composed mostly of return flows from irrigation and municipal waste water. However, the TDS levels are generally below 500 mg/L in this reach, and the water is very suitable for irrigation. Most of the water is diverted from the stream about 2.5 miles west of Mt. Pleasant. Table 3-16 summarizes the water quality in this reach of the San Pitch River. Levels of trace elements (metals) in both streams are normally below detection levels.

Table 3-17 summarizes the water quality in the lower section of the San Pitch River and in Sixmile Creek near the mouth. Water in Sixmile Creek is very good quality with

, but would be a cumulatively negative impact to stream aquatic resources.

TDS levels averaging about 350 mg/L. Waters in the lower San Pitch River consist of mostly return flows and are further degraded below the proposed project area. The average TDS in the San Pitch River above Gunnison Reservoir is about 1,050 mg/L and is about 1,635 mg/L below Gunnison Reservoir. The recommended TDS criteria for irrigation water are 1,200 mg/L. Levels of trace elements (metals) in both streams are normally below detection levels.

S3.5.6 Predicted Water Quality Effects

Under the Proposed Action, there could be some water quality impacts during construction; however, measures would be implemented to minimize those impacts. The contractor would be required to comply with applicable Federal and State laws, orders, and regulations concerning the control and abatement of water pollution. The contractor's construction activities would be performed by methods that would prevent entrainment or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into streams, lakes, and underground water sources. Sanitary wastes would be disposed of by approved methods.

The construction contract would require the contractor to develop and implement a Water Quality Management Plan (Erosion Control Plan) and a Storm Water Pollution Prevention Plan. The contractor also would be required to implement the best management practices (BMPs) specified in the *Nonpoint Source Water Pollution Control Plan for Hydrologic Modifications in Utah*, which is an addendum to the *Utah Nonpoint Source Management Plan*. Specifically, applicable sections, such as Hydromod Planning Process, Measures to Control Construction Activities, and Impoundments, would be followed and implemented. Under a worst case scenario, if sediment control facilities temporarily failed

and any stream sections were significantly impaired, remediation/restoration work would be implemented to the satisfaction of the appropriate government agencies.

Any construction work occurring in streams or associated wetlands would be conducted in compliance with USACE's 404 Permit and/or Utah State Engineer's stream alteration permit, which would include the State 401 certification process.

S3.5.6.1 Lower Gooseberry Reservoir

The average annual inflow (based on 1978–2005 data) to Lower Gooseberry Reservoir would be reduced by 40%. The average annual phosphorus load levels below the proposed Narrows Reservoir would be reduced by about 113 kg/yr, resulting from phosphorus export and uptake in the Narrows Reservoir. This would result in a 45% reduction in the average nutrient load in the total inflowing water. The average in-lake phosphorus concentration would be reduced from 0.0131 to 0.0119 mg/L, and the probability of eutrophication would be reduced from 24.3 to 19.7%. Because the DO levels are greatest near the stream inlet, a decrease in inflow is expected to decrease the overall DO level of the reservoir in winter during flood-over conditions, thus increasing the potential for fish kills, unless mitigation were implemented. Mitigation is planned for this, which would include additional storage in the Narrows Reservoir and minimum streamflow releases as discussed in section 3.4, "Fisheries."

S3.5.6.2 Scofield Reservoir

The results of the eutrophication study (Fremont-Noble Engineering) with the Narrows Dam and Reservoir show that, under the Proposed Action, there would be a reduction of average annual phosphorus

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mass loading into Scofield Reservoir (105 kg/yr) and a slight increase of 10.8% in phosphorus in-lake concentration from 0.0279 to 0.0309 mg/L. The reduction in phosphorus loading results from basin export and uptake in Narrows and Lower Gooseberry Reservoirs. The overall probability of eutrophication for the period studied shows an increase from 68.3 to 73.5% (about a 5.2% increase). The probability of eutrophication was increased slightly every year except 1984. Figure 3-6 shows a comparison of the future without project and project phosphorus level in Scofield Reservoir based on external loading.

As a result of the Proposed Action, the inflow to Scofield Reservoir would be reduced by an annual average of 5,726 acre-feet (about 9.2%). This means that Scofield Reservoir generally would operate at a lower elevation and smaller surface area. Its average flushing rate would decrease slightly, from 1.15 to 1.14. However, the flushing rate would drop below 0.85 in 10 of the 46 years studied, instead of 8 of 46 years as would occur in the future without the project (see Figure 3-7). The critical low flushing rate would occur 22% of the time with the project as compared to 17% of the time without the project. During these periods of critical flushing rate, the probability of fish kills could be somewhat higher.

Taking into account the slight increase in in-lake phosphorus concentration and essentially no change in flushing rate, professional judgment would indicate that the overall water quality in Scofield Reservoir would be degraded only slightly by the Proposed Action without mitigation. Mitigation measures to offset this potential impact are described in section 3.5.3.2.6.

S3.5.6.3 Proposed Narrows Reservoir

The overall water quality in the proposed Narrows Reservoir is projected to be good. The probability of eutrophication would be about 12% (compared to 73.5% for Scofield Reservoir and 19.7% for Lower Gooseberry Reservoir). The proposed Narrows Reservoir is not expected to strongly stratify due to its shape, water budget, and location. The active pool (the storage above the inactive pool) would only be 45 feet in depth, with an average drawdown of 9 feet during the recreation season and 12 feet annually. The proposed plan is to have three outlets spaced 20 feet apart, at elevations 8,640, 8,660, and 8,680 feet, respectively. The normal water surface elevation is 8,690 feet. If a mild thermocline develops, it normally would start at about 16 to 20 feet and, over the summer season, migrate down to a depth of 32 to 45 feet depending upon the release pattern, level of water withdrawn, and type of year. Once the reservoir was constructed, filled, and operated for several years, an operating plan would be developed jointly with the State and Federal agencies to enhance habitat for fish and wildlife downstream. As a result of the small releases and stream channel conditions downstream, the water would reach ambient conditions within the first one-fourth to one-half mile downstream, relative to temperature and dissolved oxygen, even if conditions were less than optimum in waters released.

Water quality at the proposed Narrows Reservoir would be protected by establishing protection zones adjacent to the reservoir. Within these protection zones, land use practices would be restricted to eliminate activities that would impact reservoir water quality.

S3.5.6.4 Price and Colorado Rivers

The Narrows Project would have virtually no effect on the lower Price River water quality during the November–April high TDS period,

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5-15	Author: kareynolds	Subject: Comment on Text	Date: 4/23/2010 2:44:43 PM
	What years were studied?		
5-16	Author: kareynolds	Subject: Comment on Text	Date: 4/23/2010 2:50:32 PM
	How much is a slight increase?		
5-17	Author: kareynolds	Subject: Comment on Text	Date: 4/23/2010 2:51:28 PM
	The paragraph above talks about the changes in flushing rate and the implications, which seems to imply that there is a change due to the flushing rate.		
5-18	Author: kareynolds	Subject: Comment on Text	Date: 4/23/2010 3:06:00 PM
	Where are these protection zones described? What activities are allowed or restricted? Are these things analyzed in this document?		
5-19	Author: kareynolds	Subject: Comment on Text	Date: 4/23/2010 2:51:58 PM
	who's judgement?		
5-20	Author: kareynolds	Subject: Comment on Text	Date: 4/23/2010 2:54:16 PM
	I thought phosphorus was the limiting factor. That coupled with the 5% increase in critical low flushing rates certainly seems like it's more than a slight degradation.		

What years were studied?

How much is a slight increase?

The paragraph above talks about the changes in flushing rate and the implications, which seems to imply that there is a change due to the flushing rate.

Where are these protection zones described?
What activities are allowed or restricted?
Are these things analyzed in this document?

who's judgement?

I thought phosphorus was the limiting factor. That coupled with the 5% increase in critical low flushing rates certainly seems like it's more than a slight degradation.

because the effects of depletions caused by the proposed Narrows Project would consist primarily of reduced spills from Seafield Reservoir during the snowmelt runoff period.

Implementing the Proposed Action would have a slight detrimental impact on Colorado River salinity. Construction and operation of the proposed Narrows Dam and Reservoir would remove about 1,520 tons of salt per year from the Colorado River system.

However, the project also would cause a depletion of about 5,597 acre-feet of water to the Colorado River system. An increased salinity concentration of about 0.54 mg/L would occur at Imperial Dam.

33.5.6.5 Cottonwood Creek and San Pitch River

The overall water quality of Upper Goosberry Creek is better than that of Cottonwood Creek (see table 3-14), so the additional water imported to Cottonwood Creek would improve slightly its quality. The exception may include temporary periods of slightly higher turbidity from the increased summer flows. Flows in Cottonwood Creek (below Left Hand Fork) would increase in July and August due to the increased irrigation releases, but these flows would be significantly less than peak flows that naturally occur during the spring snowmelt period. As discussed in the EIS and the FEIS in section 3.14, "Slope and Channel Stability," the Narrows Tunnel operating gate would be automated to regulate releases through the tunnel so that even during floods, the channel-forming discharge would not increase above historical conditions. Consequently, even though the Proposed Action would increase the summer base flow, it would have no effect on Cottonwood Creek channel stability because the increase would be well below the 50-year channel-forming discharge.

Except during spring runoff and winter conditions, flows in the San Pitch River below the project area consist mostly of return flows from irrigation and municipal waste water. The project would increase the volume of return flows from both of these sources; but since no new lands receive project water, the quality of return flows would be similar to existing flows or possibly be of slightly better quality because lands would receive a more complete water supply. Consequently, the concentration of dissolved salts should be more diluted in the increased volume of return flows. The potential decrease in irrigation return flows resulting from increasing agricultural efficiencies would be offset by the increase of return flow from the additional project irrigation water. Even if the overall volume of return flow were reduced significantly due to increased efficiencies, the quality of the return flows likely would not change significantly, nor would the existing quality of the San Pitch River change significantly since it is already composed mostly of return flows.

As shown in table 3-17, the salinity of lower San Pitch River is about 1,150 to 1,635 mg/L TDS compared to about 350 mg/L in Sixmile Creek. If the Manti Meadows Alternative wetland mitigation area is selected, and water is delivered from Sixmile Creek and replaced with project return flows delivered to Goodison Reservoir in exchange, there could be some impact to effected irrigated lands.

Diversions to the wetland area would have to be timed to not significantly affect the exchanged irrigation water supply, or replacement waters would need to be blended with higher quality Sixmile water to avoid impact to crops using the water. Under worst case conditions, an agreement with the Manti Irrigation Company might be needed, and minimal compensation might be required.

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Author: [unclear]	Subject: General to [unclear]	Date: 4/23/2010 2:14:52 PM
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Author: [unclear]	Subject: General to [unclear]	Date: 4/23/2010 2:14:52 PM

Further explain these sentences. Explain further what this means. Is this part of the proposed action or not? Are both of these scenarios analyzed in the document? This seems rather speculative.

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~~The proposed Narrows Reservoir would inundate 89 acres of wetlands.~~

Hydrologic and hydrologic studies were conducted to determine the potential impacts to the riparian and wetland vegetation of Gooseberry Creek resulting from decreased flows. Flow measurements conducted by the Utah Division of Water Rights indicate that the stream is a "gaining stream." This means that the stream flow increases as it moves downstream because the stream is being fed by the adjacent ground water aquifer. Because the stream is serving as a drain for the ground water system, an increase or decrease in stream water level would result in a corresponding increase or decrease in the elevation of the ground water table adjacent to the stream.

- 5-24

Water surface profile studies were conducted to determine the depth of flow in Gooseberry Creek between the Nequame damsite and Lower Gooseberry Reservoir. The studies indicated that, with the reduced flows proposed by the Proposed Action and with the existing stream cross section, the depth of flow would decrease by 6 to 11 inches under worst case conditions. However, the project plan includes proposed modifications to this portion of the Gooseberry Creek channel. These modifications include narrowing the channel to maintain the depth of flow. In designing the stream channel modifications, the intent would be to create a stream channel that is more naturally suited to the new flow regime and that will have the same depth of flow as under baseline conditions. Therefore, the depth of ground water adjacent to the stream would not decrease, nor would there be any adverse effects on riparian and wetland vegetation adjacent to the stream. If anything, it is entirely possible that the wetland communities would be enlarged as a result of the project impacts; the current outer bounds of those communities likely would be unchanged as a result of the shallow ground

- 5-25**

[illegible]

When was the data collected?

This doesn't seem possible. The stream channel will be narrowed and the water concentrated in the narrower stream but yet the riparian area associated with the wider channel would still receive enough water to be maintained? I hope there is some data to back this statement up.

water flowing toward the stream, but the wetlands likely would be increased precisely to the degree that the stream channel itself (or at least, the open water surface of the stream) narrows.

The process of narrowing the stream, as described in the SDEIS, is planned so that the configuration of the narrowed streambanks would conform to that of the original streambank with respect to slope, materials, material size, and frequency as well as the water depth. The only change would be in the width of the channel and available open water surface. The result is that the same opportunity for overbank flows and wetted perimeter would exist as in the natural configuration. The gaining nature of the stream in this reach means that ground water is flowing toward and into the stream channel and that the stream does not provide the primary supply for the riparian community. The "wetted perimeter," therefore, should continue to be supplied from this source; and the stream will continue to gain as it flows. Bank saturation will not be affected here, as it would on many streams, because the direction of the ground water flows into the stream rather than away from it. While overbank flows may be reduced in frequency, such flows, for this same reason, also are not critical to the bank saturation that supports the riparian community.

About 160 square feet (0.004 acre) of wetlands adjacent to Cottonwood Creek would be impacted by constructing the discharge structure at the end of the Upper Cottonwood Creek Pipeline. The remainder of the stream channel would not be affected. The channel presently is stable and adequately protected by natural cobble armoring.

Wetland mitigation measures are included in the project alternatives to mitigate for impacts to wetlands. The wetland mitigation

measures would provide similar wildlife habitat values lost due to the inundation of the reservoir.

S3.7 VEGETATIVE RESOURCES

Vegetation located in the study area consists primarily of plant communities common to high elevation mountain areas. Historically, the area has been used for livestock grazing and other reservoir impoundments. Cattle and sheep were introduced into the area in the 1800s and, subsequently, overgrazed the area to the extent that rangeland restoration became necessary. In 1908, the USDA Forest Service established a controlled grazing plan for the Manti-La Sal National Forest. Cattle and sheep grazing is still allowed in the area.

Major plant community types occurring in the reservoir basin have been mapped (see figure 3-8). The three major plant communities that would be affected most by reservoir inundation include vasey sagebrush, silver sagebrush, and wetlands. There are also areas within the basin that have been disturbed previously by diverting water to Cottonwood Canyon through the existing Narrows Tunnel. In addition, there are those disturbed areas associated with SR-264 that cross the north end of the basin.

The areas that are disturbed during project construction have a high probability of being infested by noxious weed species. People using the area may spread the weeds by carrying the seeds on their person or on their vehicles. Seeds will get into the water and be spread downstream in both Gooseberry Creek and Cottonwood Creek. Control of noxious weeds as part of the Narrows Project would be the responsibility of SWCD.

Areas along the foothills of the west side of the Wasatch Plateau would be dissected with the diversion pipelines. Plant communities such as big sagebrush, (*Artemisia tridentata*

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var. *tridentata*), gambel oak (*Quercus gambelii*), grasslands, and mountain brush communities along with their associated wildlife species would be disturbed by the conveyance pipelines. These disturbances, however, would be only temporary because the pipelines would be buried. Revegetation that reflects the existing plant community would be accomplished with a mixture of grasses, forbs, and shrubs. A total of 30 acres along a 17-mile-long alignment would be disturbed by the pipeline construction.

The reservoir basin was identified to receive the most significant impact by the proposed project. For this reason, the reservoir basin was studied in greater detail than the other areas associated with the project. The affected wetlands in this area occur in a dendritic pattern in the riparian zones along small drainages. As shown in table S-19, plant communities that would be highly impacted by reservoir inundation include vasey sagebrush, silver sagebrush, and wetlands. All vegetation in the 604 acres listed in the table would be inundated by the reservoir.

S3.8 RECREATION AND VISUAL RESOURCES

S3.8.1 Recreation Resources

According to the Utah Division of Parks and Recreation's 1992 *State Comprehensive Recreation Plan* (SCORP), the most popular outdoor individual recreational activity in Utah is fishing, followed by walking, golf, and camping. As with other major reservoirs along the Wasatch Front, Lower Gooseberry Reservoir, Beaver Dam Reservoir, and Fairview Lakes are heavily fished and overcrowded.

Boating also ranks as one of the more popular outdoor recreation activities in Utah, and not enough flat-water boating and boat launching

lines presently are available to meet public demand. Information from the Utah SCORP suggests that additional boating facilities are needed for the potential growth in demand for recreation users statewide.

Family-favored activities are sightseeing, developed camping, primitive camping, and fishing, among others. First choices for new facilities near communities are picnicking, fishing, special event areas, ice skating, and snowmobiling.

Beaver Dam is a heavily used day-use area for anglers near the proposed project, and there are several developed USDA Forest Service campground facilities in close proximity to the project area. The Lower Gooseberry Reservoir (15 units), Gooseberry (20 units), Flat Canyon (13 units), and Lake Campground (51 units) are all fee areas, with a 92-day season of use from June 15 through September 15. Water, sanitation facilities, tables, and fire grills are provided. Boulder Reservoir is a nondeveloped, dispersed camping area in the area. There are vault toilet facilities there. These campgrounds (with the exception of Boulder) are typically full on weekends and one-third full on weekdays throughout their season of use.

The proposed reservoir area is known as a very popular location for snowmobile enthusiasts. The USDA Forest Service and UDOT maintain unloading, parking, and sanitation facilities along SR-31, immediately west of the proposed reservoir area, from which snowmobiles embark for travel along groomed trails following Skyline Drive and SR-31, as well as in the proposed reservoir area itself.

Whitewater boating is limited mostly to a relatively short season when flows are peaking, coinciding with the high flows from the White River, when the gates at Scofield Reservoir are closed. In wet years, spills from Scofield may contribute to the peak.

Author: Karyn Smith Subject: Recreation and Visual Resources
 Date: 10/10/2010 10:10 AM
 Title: 10/10/2010 10:10 AM
 File: 10/10/2010 10:10 AM

Does this really reflect all of the disturbance? What about vehicle access routes during construction? There is a 2009 SCORP. Why is the 1992 version being used? This information is outdated.

historic properties are located within the APE, and if they will be adversely affected by construction activities associated with the proposed project, a memorandum of agreement (MOA) will be developed. The MOA would be among Reclamation, the Utah State Historic Preservation Office, the USDA Forest Service, the Advisory Council on Historic Preservation (ACHP), if it chooses to participate, and SWCD. The MOA would outline cultural survey protocols, report and treatment plan requirements, and procedures for mitigation on potential impacts to identified and unidentified (inadvertent discovery situations) historic properties. The MOA also would include, among other stipulations, a Native American consultation summation and would identify the cultural resource APE for the proposed project.

Numerous cultural resource inventories previously have been conducted within the proposed project area. Under a contract with Dumas and Moore in 1979, the University of Utah conducted a Class I and Class III cultural resource inventory on a portion of the proposed project APE.

The 1975 Class III inventory identified two prehistoric archaeological sites near the proposed dam and reservoir areas. The sites were open lithic scatters with few formal tools. No further evidence of cultural materials was present on these sites. From the limited data available, the proposed project area appears to support the idea that high altitude areas were utilized as temporary, seasonal hunting grounds during the Archaic period, about 2,000-4,000 years before present. In addition, a total of 26 isolated artifacts were recorded during the cultural resource inventory.

Also, one historic cultural resource site, a stone structure foundation, was located during the 1979 inventory. The three cultural resource sites were not evaluated for their

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Appendix H

Comments and Responses

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NRHP eligibility in 1979. As a result, the sites will be revisited and evaluated for eligibility as stated in the environmental commitments for cultural resources.

The design and, therefore, the APE of the proposed project have changed since the 1979 cultural resource inventory. Class I and Class III cultural resource inventories have not been performed for the Upper Cottonwood Creek, Oak Creek, or East Bench Pipeline alignments, new road alignments, borrow areas, staging areas, new campgrounds, marinas, wetland mitigation areas, or haul roads. Class I and Class III inventories covering the entire APE of the proposed project will be conducted prior to initiation of final design and construction in accordance with 36 CFR Part 800.

Predicted effects to cultural resources as a result of the proposed project will be determined following the Class I and Class III inventories of the entire project APE.

S3.10 ECONOMIC AND SOCIAL RESOURCES

Social and economic conditions in Carbon and Sanpete Counties are underscored by a century-long dependence upon agriculture. Both valleys originally were developed for agricultural use. However, rich coal deposits were discovered in Carbon County during the 1860s. As a result, the mining industry has become the principal economic activity in the area. Agriculture still remains a significant economic activity in both Carbon and Sanpete Counties. Lack of sufficient irrigation water and concerns over neglected longstanding agreements on water rights constrain the agricultural sector in Sanpete County.

Population in the two-county project area is 43,185 according to the 2000 census. Carbon County had a 2000 population of 20,422. A 2007 census population estimate for this

county was 19,364, which is about a 5% decrease since 2000. Sanpete County's population in 2000 was 22,763. For 2007, the population estimate was 24,644, which is an increase of approximately 8% from the 2000 census. The largest community in the two counties is Price with latest census population data from 1990 and 2000; for 1990, the population was 8,712, which decreased to 8,402 in 2000.

The College of Eastern Utah in Price and Snow College in Ephraim are significant cultural and economic resources for Carbon and Sanpete Counties, respectively. The two counties have had a higher than average rate of unemployment since 1960 (refer to table 3-24). For 2007, the unemployment rate for Carbon County was 4.6%, Sanpete County was 3.6%, and the State of Utah was 3.0%. The leading economic sectors in Carbon County in 2006 (in order of importance) are mining, services, government, trade, and manufacturing. Leading economic sectors in Sanpete County include government, services, trade, agriculture, and manufacturing. Because of a larger population base, the city of Price rates higher on community facilities than do the north Sanpete County communities. Moroni and Spring City both have a particular need for improvements in police and fire protection, health care, housing, restaurants, day care facilities, youth recreation facilities, and cultural opportunities. In recent years, the construction and continued growth of the State Correctional Facility at Gunnison has created a sharp increase in the demand for housing in the project area, resulting in housing shortages. Educational facilities in the project area appear average, based on statewide norms.

Agriculture in Sanpete County is of major economic significance and involves a sizable number of people. From 1992 to 2002, the census of agriculture data shows the number

5-28

Page: S-28

Author: kareynolds Subject: Comment on Text Date: 5/21/2010 9:43:16 AM
Again, how can a decision be made with incomplete information? Has SHPO been consulted with?

Author: kareynolds Subject: Comment on Text Date: 5/21/2010 9:43:11 AM
Where is the discussion on the water needs in Carbon County. This section focuses on Sanpete County's needs and shortages, what about the agricultural and municipal needs for Carbon County?

Again, how can a decision be made with incomplete information? Has SHPO been consulted with?

Where is the discussion on the water needs in Carbon County. This section focuses on Sanpete County's needs and shortages, what about the agricultural and municipal needs for Carbon County?

water amount provided by each of the alternatives would support the existing community lifestyles and social structure in the study area.

S3.11 LAND RESOURCES

The proposed Narrows Project is located near the exterior boundaries of the Manti-La Sal National Forest. The damsite and other project features would be located on 225 acres of Reclamation withdrawn land. SWCD has acquired 366 acres of private lands for project uses from owners by perpetual easement or in fee. SWCD would purchase 1,340 additional acres of private and State School Trust lands for project needs (table 2-4).

While there are some private in-holdings, the majority of the lands located within the forest boundaries are federally owned and are administered by the USDA Forest Service pursuant to specific authorities granted by Congress to the Secretary of Agriculture and pursuant to the public land laws.

Lands within forest reserves may, however, be appropriated and used for irrigation works constructed under authority of the Reclamation Act of 1902 (32 Statute 388). Therefore, by Secretarial Order dated April 1, 1941, Reclamation withdrew certain forest lands from public entry under the first form of withdrawal (as provided in Section 3 of the 1902 Act). These lands were withdrawn for the construction, operation, and maintenance of the Gooseberry Project. The Gooseberry Project, as originally planned, was never constructed. However, a portion of the original project was constructed as the Scofield Project. The remainder of the Gooseberry Project, subsequently, was renamed the Narrows Project and is presently proposed as a non-Federal project. Today, approximately 6,728 acres of the lands originally withdrawn by Reclamation for the

Gooseberry Project remain under Reclamation withdrawal for the Narrows Project.

The 1941 Reclamation withdrawal of lands within the Manti-La Sal National Forest created the potential for two Federal agencies—Reclamation and the USDA Forest Service—to have overlapping jurisdiction on the same lands. However, the authority of the Secretary of the Interior under the 1902 Act to withdraw and administer lands for Reclamation purposes is limited to the specific uses provided for in that Act, that is, Reclamation projects. As a result, whereas Reclamation's withdrawal is dominant, its jurisdiction has been somewhat nominal because no Reclamation project actually was constructed on those lands; as a result, the USDA Forest Service exercised the only meaningful jurisdiction over them per the master interagency agreement between Reclamation and the USDA Forest Service. Once Reclamation initiated planning and environmental compliance activities for the Narrows Project, however, the overlap between the authorities of the Secretary of the Interior under the 1902 Act and those of the Secretary of Agriculture became real.

At present, both agencies have administrative authority over these lands—but each for activities related only to its own mission. Thus, Reclamation has jurisdiction over the withdrawn lands for uses associated with or incident to environmental compliance, planning, construction, or O&M of projects under the Reclamation laws, such as the Narrows Project; and the USDA Forest Service has jurisdiction over the withdrawn lands for uses associated with or incident to national forest activities, such as recreation, grazing, and timber sales. If the Narrows Project were constructed, it is anticipated that the Reclamation withdrawal would be revoked for any lands not needed for the project.

30	Author: karmynolds	Subject: Replacement Text	Date: 5/21/2010 10:18:53 AM
31	Author: karmynolds	Subject: Comment on Text	Date: 5/21/2010 10:17:38 AM
32	Author: karmynolds	Subject: Comment on Text	Date: 5/21/2010 10:17:38 AM
33	Author: karmynolds	Subject: Comment on Text	Date: 5/21/2010 10:17:38 AM
34	Author: karmynolds	Subject: Comment on Text	Date: 5/21/2010 10:17:38 AM
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49	Author: karmynolds	Subject: Comment on Text	Date: 5/21/2010 10:17:38 AM
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5-29

Land ownership and use characteristics of Sanpete and Carbon Counties are summarized in tables 3-28 and 3-29, respectively. Federal and State-owned land comprises approximately 60% of each county's total land base; whereas, privately owned land accounts for 38% of the land base in Sanpete County and 41% of the land base in Carbon County. Of the total agricultural land in Carbon County, only 2% has been developed for cropland, and the remainder is rangeland. Comparatively, 36% of the total agricultural land in Sanpete County has been developed for cropland. An inventory of prime and unique farmland (Public Law 95-87) did not reveal any prime or unique farmland in the project area.

Lands approximately 3 miles east of the project area are under a Federal coal lease and are currently being mined. Additional mineable coal reserves are believed to exist beneath lands east of the East Gooseberry Fault approximately 1 mile east of the project area. A nearby landowner with both land and mineral rights to the east of the proposed reservoir, between the proposed dam and the currently operating Skyline mine, expressed to Reclamation in April 2009 his intent to mine his coal, but exact plans and timing are unknown at this time. Lands immediately adjacent to the project area (within the Gooseberry Graben) are not believed to have mineable coal reserves due to an offset of several hundred feet within the Gooseberry Graben area.

Agricultural land use within the project area is based on the livestock economy of the area—principally, cattle and sheep operations and a number of Grade A dairies. Other land uses include the turkey industry, large garden spots, potatoes, raspberries, and Christmas or ornamental trees.

The majority of the land area that would be inundated by the reservoir is privately owned; the dam, however, would be on Federal land. Some of the private land near the proposed dam and reservoir within the national forest boundary has been subdivided for summer homes and recreation development. Such development must comply with the zoning and building codes of the Sanpete County Commission and the sanitation requirements of UDEQ. The area adjacent to the proposed Narrows Reservoir is county-owned and is zoned as Forest Watershed 1-10 (one dwelling per 10 acres). The primary areas now under development include the area approximately 2 miles east of Lower Gooseberry Reservoir and the area on the north side of privately owned Fairview Lakes.

The Fairview Lakes development contains approximately 150 to 200 memberships in the privately owned Fairview Lakes Association. The memberships include the right to use a specific lot in the area north and east of Fairview Lakes and south of the project area to park a trailer or construct a cabin. This area has been rezoned, and the one dwelling per 10 acres development ratio does not apply to this area. As a result, it has been developed with lots every 1+ acre each. About 50 cabins have been constructed within the past 5 years. The cabins are used during the winter as well as the summer since the general area is a popular cross-country skiing and snowmobiling area. Many of the other lots have one to three trailers parked on them for the summer season (June–September). The private landowners allow their members to use some of the area southwest of Fairview Lakes for recreation use.

Portions of three grazing allotments occur within the project area. They include Swen's Canyon allotment, the Gooseberry-Cottonwood allotment, and the Beaver Dams-Boulder allotment.

This contradicts the information on S-28 and S-29 under S-3.10.

5-30

Page: S-33

Author: Matthew Davis Subject: Study Note Date: 5/18/2016 11:34:14 AM
 E: -What is the basis for this determination? How is this science used to reach this conclusion?
 Location: Lampasas Subject: Comment on Text Date: 5/18/2016 16:43:05 AM
 Wasn't dam failure brought up as a public safety issue?

Additional allotments that may be impacted by the mitigation measures include the Fairview, Cabin Hollow, and Pondtown allotments.

Swan's Canyon allotment is located in two watershed drainages. That portion which is located in the same drainage as the proposed Narrows Dam and Reservoir consists of 583 acres, of which all is suitable for grazing land in fair range condition. Grazing capacity of that portion is about 115 animal unit months (AUMs).

The Beaver Dams-Boulder allotment is a combination of two allotments. Grazing use includes 1,200 head of sheep with a season of July 6 to October 5. It is grazed with a rest rotation grazing system where part of the allotment is rested each year.

The Cottonwood-Gooseberry allotment is grazed by 500 head of sheep with a season of July 6 to September 30 using a rest rotation grazing system. Suitable grazing land was determined during a range analysis conducted during 1976.

A summary of information concerning the three grazing allotments and four grazing permits is presented in table 3-30. Range conditions and grazing were discussed in the vegetation section of chapter 3.

Under the Proposed Action, major changes in land use are not anticipated. Construction of summer homes outside of platted subdivisions might be accelerated but would be limited by zoning restrictions of one dwelling per 10 acres. Development of the Fairview Lakes complex would continue as previously planned, although build-out may occur earlier. Narrows Reservoir, SR-264 and forest development roads relocation, the recreation area, and the conservation easements adjacent to the reservoir would reduce the available grazing area by 856 acres. This area is about 10% of

the suitable grazing acreage in the area. The Proposed Action may result in the direct loss of 114 AUM grazing use (856 project acres per 1.5 acres per sheep month = 571 sheep months per 5 sheep months per AUM = 114 AUM); however, indirect loss of grazing (estimated to be about 1,014 acres) may occur on adjacent areas around the reservoir, between the highway and the reservoir and around camping and residence areas. The total grazing impact is estimated to be 249 AUM (1,870 acres per 1.5 acres per sheep month = 1,247 sheep months per 5 sheep per AUM = 249 AUM). This impact of grazing includes both private and Federal lands. Restrictions on the number of sheep and cattle allowed and/or realignment of grazing allotments may be required due to implementing the Proposed Action.

As the recreation use increased and summer home development proceeded, there could be additional areas in the upper Gooseberry drainage which would not be available for livestock grazing due to anticipated or existing livestock-people conflicts. For every 7 to 10 acres of additional land which cannot be grazed due to conflicts with traffic and/or people, there may be a loss of 1 AUM (5 sheep months) grazing use. Grazing permits and allotment boundaries may need to be adjusted. Land use in the Manti-La Sal National Forest Land and Resource Management Plan would change to reflect project implementation.

No reduction of acres of mineable coal reserve is anticipated as long as the dam is designed to withstand the effects of induced seismicity from mining approximately 1 mile away.

S3.12 PUBLIC SAFETY

The public safety issues raised, related to development of the Narrows Project, deals with increases in recreational traffic. The

What is the basis for this determination?
 Need to know what science was used to reach this conclusion.
 Wasn't dam failure brought up as a public safety issue?

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area adjacent to the proposed Narrows Reservoir is served by two State highways, SR-31 and SR-264. These two-lane roads are narrow and winding. Both highways are maintained for year-round use by the Utah Department of Transportation.

Average daily traffic (ADT) numbers for these roads are listed in table 3-31. ADT values shown in the table are based on UDOT traffic counts taken in 2000.

ADT on SR-31 would increase by 252 or 16% under the Proposed Action. ADT on SR-264 would increase by 31%. However, even with these increases, both roads would still be well within their design capacity. In order to increase safety, additional warning lanes with adequate sight distance would be provided at recreation area entrances and exits.

S3.13 AIR QUALITY RESOURCES

Ambient air quality is monitored by UDEQ, Division of Air Quality, at locations throughout the State of Utah. There are no existing monitoring sites near the proposed Narrows Project located in Sanpete County. The closest monitoring station is located in north Provo. Data from this station cannot be used as an estimate of the existing air quality in the impact area of influence because Provo is an urban/suburban area. The actual ambient air quality in Sanpete County most likely is much better than that in north Provo because of the lower population density and lack of significant major emission sources.

For the purposes of air quality management, geographic areas of the country are classified as "attainment" or "nonattainment" with the National Ambient Air Quality Standards (NAAQS). All air quality standards are

classified as being met in Sanpete County and, therefore, would have an "attainment" classification.

The Narrows Dam and Reservoir area is located in a fairly remote and rugged mountainous terrain. The air quality associated with this area is generally excellent. Primary sources of existing air pollutants in the project area include dust, smoke from campfires in area campgrounds, and exhaust emissions from intermittent traffic and recreational vehicles. Dozens of summer homes are located in the vicinity of the project. High levels of dispersed recreational use of this area are common.

Noise and air pollution are not expected to significantly increase under the Proposed Action (table 3-32).

S3.14 SLOPE AND CHANNEL STABILITY

Fairview Canyon, which contains Cottonwood Creek, is a steep, narrow canyon located east of Fairview, Utah. Highway SR-31 is located in the canyon. The canyon is approximately 7 miles long. The stream elevation at the mouth of the canyon is about 6,300 feet and about 8,800 feet near the summit. Typical slopes of the canyon wall are 2:1 to 2.5:1 (ratio of horizontal to vertical distance). Numerous landslides are located throughout the canyon on both sides. In several places, continual road maintenance is required to repair damage caused by landslides.

A total of 104 landslides were identified from aerial photographs and during a 1991 field review along the slopes of a 6-mile reach of Cottonwood Creek. The review team was comprised of individuals from various government agencies and private consulting firms. The review was to determine the impact of projected flow increases from

5-31

Page: S-34

Author: [redacted] Subject: Comment on Text Date: 10/27/2010 10:00:00 AM
 In this case, there is no need to be updated to reflect any land slides in the last 19 years and current information on the other slides identified.

Is this data from 199? If so, it needs to be updated to reflect any land slides in the last 19 years and current information on the other slides identified.

5-32
5-33

5/1/2009 10:00 AM Subject: Comments on Text Date: 5/1/2009 10:00 AM
5/1/2009 10:00 AM Subject: Comments on Text Date: 5/1/2009 10:00 AM
An average year comparing data from when to when? Is there not a more recent average year than one from 40+years ago?

Narrows Tunnel on adjacent slopes of Cottonwood Creek. The state of activity of the slides was noted with 85 slides classified as "active" and 19 classified as "dormant." The certainty of landslide identification included 89 slides as "definite," 13 as "probable," and 2 as "questionable." The distances of the landslides from the tunnel portal ranged from 0.3 mile to 5.1 miles. Dominant types of slope movement of the 104 landslides are shown in table 3-33.

Based on observations during the review, it was determined that landslide activity is not related to stream channel stability or the flow in Cottonwood Creek but is caused by saturation from water sources on the hillsides.

Under the Proposed Action, increased flows in Cottonwood Creek will occur due to releases from Narrows Reservoir through the Narrows Tunnel and Upper Cottonwood Creek Pipeline. These increased flows will occur below Left Hand Fork where the Upper Cottonwood Creek Pipeline will discharge into the creek. Figure 3-10 is a hydrograph based on daily flow data which compares present, or No Action Alternative, flows in Cottonwood Creek with flows that will occur under the Proposed Action. The figure is based on 1968 data, which is an average year. As shown in the figure, the peak discharge of about 112 cfs occurs during the snowmelt runoff period. Presently, summer base flows are about 18 cfs. Under the Proposed Action, the summer base flows would increase to about 50 cfs. The maximum flows possible through the tunnel would increase by 45 cfs, from a preproject capacity of 15 cfs to a Proposed Action capacity of 60 cfs.

The 50-year rainfall peaks expected in the canyon range from 330 cfs below Left Fork to 570 cfs near the mouth of the canyon. The possible maximum increase in tunnel flows is less than 15% of the rainfall peaks. The

snowmelt peak is not a consideration because the tunnel will not operate during the snowmelt runoff. Based on the physical characteristics of Cottonwood Creek and the impacts of the proposed project on the flow characteristics, the project is unlikely to have a significant impact on the stability of the creek. To insure that the tunnel releases will not cause an impact, the measures described below will be implemented.

As described in chapter 2, remote control of the Narrows Tunnel operating gate would be provided to automatically regulate the releases through the tunnel. These controls would be coupled to an automated stream-gauging station on Cottonwood Creek near the mouth of the canyon. The stream flow in Cottonwood Creek would be constantly monitored by these controls. As the stream flow increases during high runoff events such as thunderstorms, the tunnel operation would be discontinued when the flow exceeds 100 cfs. The project releases would not resume until after the flows drop below 100 cfs. Under this operating regime, the project flows through the tunnel would not increase streamflows above what is considered safe for channel stability. Increased flows under project conditions would be well below the 50-year channel-forming discharge.

Erosion along the banks of Cottonwood Creek would be carefully monitored, especially during the first year of operation, to verify that the project has no effect on Cottonwood Creek channel stability. Appropriate action would be taken if additional erosion above background levels is observed during project operation. Remedial actions could include placing additional armoring materials in the channel or along the bank or revising project operation to avoid more widespread stability problems.

Doesn't the previous column state that the tunnel capacity would be 60cfs? If the capacity is 60 cfs, then how could the tunnel handle 100 cfs?

An average year comparing data from when to when? Is there not a more recent average year than one from 40+years ago?

Narrows Project
Supplemental Draft EIS

regulations, and Executive orders to be integrated concurrently to the fullest extent possible in an EIS.

The following environmental laws, rules, regulations, and Executive orders have been considered during the preparation of the SDEIS. It has been determined that the Narrows Project would have no adverse effect upon them.

- ◆ Executive Order 11588 (Flood Plain Management)
- ◆ Wild and Scenic Rivers Act, Public Law 90-542. In 2007, the USDA Forest Service and Bureau of Land Management evaluated thousands of river miles for potential inclusion in the National Wild and Scenic Rivers System. In determining suitability, a key question was, does the river segment have Outstanding Remarkable Values (ORV). The USDA Forest Service conducted an environmental impact statement to evaluate the suitability of 86 eligible river segments (840 miles) including 21 miles of Fish Creek and Gooseberry Creek. The Record of Decision, signed November 2008, determined that Fish Creek and Gooseberry Creek were not suitable to be designated by Congress as components of the National Wild and Scenic Rivers System. All the non-suitable river segments are no longer afforded agency interim protection under the Wild and Scenic Rivers Act and continue to be managed under the direction of the respective agencies.
- ◆ Executive Order 13097 (Indian Sacred Sites)
- ◆ Executive Order 11990 (Protection of Wetlands).

S3.21 CUMULATIVE IMPACTS

The following discussion addresses the cumulative impacts to area resources in the Upper Colorado River Basin. Any analysis of cumulative impacts must deal with the issue of scope, both in terms of spatial and temporal scales. In the following discussions, these scales will vary depending upon the resource under evaluation.

Since 1960, some 30 water resources projects have been built or are under construction by Reclamation in the Upper Colorado River Basin (table 3-38). Reclamation estimates that those projects have provided full irrigation service to 138,460 acres with supplemental service to another 204,670 acres. These developments account for an estimated 62,776,000 megawatt hours of generated power and some 431,100 acre-feet of M&I water supplied annually. Recreational use associated with these projects, including sightseeing, picnicking, camping, boating, fishing, hunting, and other activities, is estimated at 45,068,970 annual recreation days. In terms of average annual permanent employment opportunities, these projects are responsible for some 13,716 jobs.

Aside from providing a net increase of 41,900 annual recreation days, and providing 855 acre-feet of M&I water annually, the Narrows Project would not affect the above resources. No new acres of cropland would be irrigated; no new power would be generated; and no new permanent jobs would be created. Because there would be no net change in existing levels of these resources in the Upper Colorado River Basin, it is assumed that there would be no cumulative impact from the proposed project; and it has been determined that further analysis of cumulative impacts of the above described resources is not necessary.

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5-34

What about the Endangered Species Act?
 Migratory Bird Treaty Act and associated
 executive order?
 How is it possible to have no adverse impacts
 on wetlands?

Several resource issues have been affected by past Reclamation developments and would be affected by the proposed project; thus, they have the potential to contribute to cumulative (additive) impacts within the region and beyond. These issues involve stream depletions that can impact fisheries and endangered native fishes and changes in salt loading within the Colorado River. These issues are treated in the SDEIS under the headings of fisheries, threatened and endangered species, and water resources, use, and quality.

S4.0 CONSULTATION AND COORDINATION

This section details the consultation and coordination between Reclamation and other State, Federal, and local agencies; Native American tribes; and the public in preparation of the SDEIS and the draft EIS published in 1998, which the SDEIS updates and supplements. Throughout the EIS process dating back to 1990, input has been actively solicited from a broad range of public constituencies as part of the ongoing public involvement process. Comments and involvement in the planning for and preparing of the Narrows Project generally were sought through two broad efforts: communication and consultation with a variety of Federal, State, and local agencies; Native American tribes, and interest groups; and the formal SDEIS scoping process and comment process, both of which invited input from the general public.

S4.1 SUMMARY OF INTER-AGENCY COORDINATION 1996–2003

In 1996, Reclamation invited a number of State and Federal agencies to become cooperating agencies in preparation of the

DEIS. The two agencies that agreed to become cooperating agencies for the EIS process, including the SDEIS, are the USDA Forest Service and U.S. Army Corps of Engineers. In addition to these two agencies, the following agencies had representation on the interdisciplinary team led by Reclamation that prepared the draft EIS published in 1998:

- ♦ U.S. Fish and Wildlife Service
- ♦ U.S. Environmental Protection Agency
- ♦ Utah Division of Wildlife Resources
- ♦ Utah Division of Water Quality
- ♦ U.S. Department of the Interior, Office of the Solicitor
- ♦ Sanpete Water Conservancy District

Reclamation hosted periodic cooperating agency meetings and interdisciplinary team meetings throughout preparation of the DEIS and the SDEIS, to ensure that all of the agencies were informed of, and involved in, the issues and analyses related to the SDEIS.

S4.2 CONSULTATION

Consultation was conducted as needed with agencies or experts that provided information for preparation of the DEIS published in 1998 and the SDEIS.

S4.3 PUBLIC INVOLVEMENT AND SCOPING

The scoping process for the SDEIS was conducted by Reclamation beginning in November 2003 to provide the general public, organizations, State and local governments, and affected Federal agencies an opportunity to identify issues and concerns they believe should be studied early in the preparation of

What happened between 2003 and 2010?

Utah Lake drainage areas. Municipal use per capita in the Wasatch Front drainage basins

for residential, commercial, and institutional uses is shown in tables 1-1 and 1-2.

5-36

Table 1-1.—Current per Capita Culinary and Secondary Use Values for Wasatch Front Drainage Basins

Culinary per Capita Use						
County	Residential Use		Commercial, Institutional, and Industrial		Total Culinary Use	
	acre-ft/yr ¹	GPCD	acre-ft/yr	GPCD	acre-ft/yr	GPCD
Weber Basin					0.220	197
Summit	0.082	225	0.058	52	0.140	277
Morgan	0.261	223	0.029	26	0.290	268
Weber	0.127	115	0.102	51	0.229	204
Davis	0.114	102	0.068	79	0.203	181
Jordan Basin					0.280	250
Salt Lake	0.188	177	0.082	73	0.290	250
Utah Lake					0.248	218
Utah	0.163	143	0.064	75	0.244	218
Utah	0.183	182	0.072	64	0.253	226
Wasatch	0.189	178	0.049	44	0.249	222
Average overall use	0.171	152	0.085	75	0.256	228

Secondary per Capita Use						
County	Residential Use		Commercial, Institutional, and Industrial		Total Secondary Use	
	acre-ft/yr	GPCD	acre-ft/yr	GPCD	acre-ft/yr	GPCD
Weber Basin					0.147	131
Summit	0.050	45	0.038	32	0.086	77
Morgan	0.045	40	0.000	0	0.045	40
Weber	0.141	126	0.019	17	0.160	143
Davis	0.129	115	0.015	14	0.145	129
Jordan Basin					0.011	10
Salt Lake	0.005	5	0.005	5	0.011	10
Utah Lake Basin					0.063	56
Utah	0.049	41	0.017	15	0.053	46
Utah	0.040	38	0.008	5	0.046	41
Wasatch	0.056	52	0.025	22	0.083	74
Average overall use	0.048	43	0.012	10	0.059	53

¹ acre-ft/yr = acre-foot per year.

Why isn't the use in Carbon County also included, since that's where the water is currently used?

evaporation, these losses either become part of the water supply for the shallow water table or become return flows to the natural surface streams. These losses support wetlands and aquatic habitat and become part of the water supply for downstream users. Total losses from local supplies would amount to an estimated 17,600 acre-feet per year before efficiency improvements were implemented. The losses would be expected to be reduced to about 14,100 acre-feet per year with implementing efficiency improvements. These efficiency improvements would result in a combined loss reduction of about 3,500 acre-feet per year.

1.4.3 Narrows Tunnel Rehabilitation

The poor condition of the existing Narrows Tunnel threatens the ability to deliver the existing water supply. The 3,100-foot-long Narrows Tunnel was constructed in 1964 to divert water from Gooseberry Creek to Cottonwood Creek and to the Fairview area for irrigation. It was designed to be concrete-lined and also serve as the outlet for the proposed Narrows Reservoir. Since its construction more than 30 years ago, the tunnel has experienced severe stability problems. Steel sets with wooden lagging were installed in certain reaches of the tunnel to provide additional reinforcement. However, the steel sets were widely spaced, and loose rubble from within the tunnel significantly loaded the wooden lagging between sets. As time passed, the lagging began to fail, permitting the roof and ribs to slough over significant portions of the tunnel. In the early 1980s when it became evident that the tunnel could eventually collapse, a 36-inch corrugated metal pipe (CMP) was installed through the least stable tunnel sections to maintain the waterway. This

measure is considered to be temporary because the CMP eventually will collapse due to rust or excessive earth loads.

1.4.4 Recreation and Fishery Opportunities

In addition to the primary purpose of supplying water to Sanpete County, the proposed project would result in improved and additional recreation and fishery opportunities in Sanpete County. The recreation demand is increasing rapidly in the project area. The most popular outdoor recreational activities in Utah are fishing, boating, swimming, water skiing, camping, picnicking, hunting, and horseback riding. Boating ranks as one of the most popular outdoor recreation activities in the State of Utah. However, adequate flatwater boating and boat launching areas currently are not available in Sanpete and Carbon Counties. This need was included in the top 10 recreation issues in Utah identified in public meetings conducted by the Utah Division of Parks and Recreation in 1985 and 1990. The 1992 Utah State Comprehensive Recreation Plan (SCORP) states that:

"As Utah's population continues to grow, so does the demand for recreation facilities and opportunities. Obviously, the recreation system in place in 1970 or even 1980 is no longer adequate in the 1990s."

The SCORP suggests that additional water-based recreation areas are needed to accommodate the potential growth in demand for recreation use throughout the State.

In identifying priorities for recreation development, the SCORP states that:

"Generally, those projects in or near major urban and rural service

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John M. Williams	Subject: State Water	Date: 1/25/2009 4:51:16 PM
I think that you are going to have some opposition to this. There are tons of fishing and recreational opportunities nearby. What makes this one different?		
John M. Williams	Subject: Comment on Text	Date: 1/25/2009 5:41:54 PM
Where is the discussion related to impacts to supply-demand for Carbon County?		
John M. Williams	Subject: Comment on Text	Date: 1/25/2009 5:46:07 AM
Use the 2009 SCORP information.		
Same comment posted by Timothy Swales		

I think that you are going to have some opposition to this. There are tons of fishing and recreational opportunities nearby. What makes this one different?
Where is the discussion related to impacts to supply-demand for Carbon County?
Use the 2009 SCORP information.

Author: michaelskay Subject: Story Hole Date: 1/25/2010 4:56:49 PM
 Don't think that we need to issue an amendment - the land use change was done when you withdrew the land. It is now under the management of BOR. If this is in reference to activities other than the reservoir you need to be more specific

1.5.4 Price-San Rafael Rivers Unit, Colorado River Salinity Control Program

The Price-San Rafael Rivers Unit of the Colorado River Water Quality Improvement Program under the Colorado River Salinity Control Act would reduce salt contribution to the Colorado River by about 161,000 tons annually through a system of on-farm and off-farm irrigation improvements. The Narrows Project would divert water from the Price-San Rafael River Basins to develop a supplemental irrigation water supply of 5,400 acre-feet per year for municipal use and for approximately 15,420 acres of presently irrigated land in north Sanpete County, Utah. The Price-San Rafael Rivers Unit more than compensates for the trans-basin diversion of 5,400 acre-feet under the Narrows Project.

1.5.5 Upper Colorado River Endangered Fish Recovery Program

A coalition of agencies and organizations came together in 1988 to recover endangered Colorado River Basin fish and provide for future water development for agricultural, hydroelectric, and municipal uses.

Called the Recovery Implementation Program (RIP) for Endangered Fish Species in the Upper Colorado River (Recovery Program), this effort involves Federal, State, and private organizations and agencies in Colorado, Utah, and Wyoming. The Recovery Program complies with all applicable laws, including the Federal Endangered Species Act, State water laws, river laws, and interstate water compacts.

Recovery strategies include conducting research, improving river habitat, providing adequate streamflows, managing nonnative fish, and raising endangered fish in

hatcheries for stocking. Ongoing activities include the development of recommended flow regimes for the Price River to benefit endangered fish populations. As of August 2009, the Recovery Program is in the final stages of developing these flow recommendations.¹

1.6 DECISIONS TO BE MADE BASED ON THIS ANALYSIS

Based on the analysis documented in this SDEIS, the responsible official for Reclamation will make the following decisions:

- Whether Reclamation should approve SWCD's application for a SRPA loan to construct the Narrows Project
- Whether Reclamation should approve SWCD's use of Reclamation withdrawn lands for the Narrows Project, in accordance with Reclamation law
- Under what terms and conditions (of a local supplemental agreement between Reclamation and the USDA Forest Service) should the agencies administer resources within the total areas of project influence

In addition, the cooperating agencies may use this SDEIS to aid them in making the following decisions:

- Whether the USDA Forest Service should:
 - 1. Amend the Forest Plan to reflect Narrows Project land use changes
 - 2. Authorize mitigation measures on USDA Forest Service

¹ <http://www.coloresdrieverecover.org/general-information/about.html>

administered lands inside the
Rocky Mountain wilderness lands

Issue No. 1 - How would threatened
and endangered species be affected
by the Narrows Project?

The project area and potentially affected
offsite areas contain the habitat for several
federally listed endangered and threatened
species, including the Colorado pikeminnow,
bonytail, humpback chub, razorback sucker,
Canada lynx, Utah prairie dog, black-footed
ferret, yellow-billed cuckoo, southwestern
willow flycatcher, lesser prairie-chicken,
Graham beard tongue, and the Utah Basin
hookless eel. Due to the listing of these
species as threatened, endangered, candidate
or proposed, the protection of a sensitive
species habitat has become a matter of
concern to the U.S. Fish and Wildlife Service
(Service) and to the public.

Indicators for this issue:

- Acre-feet of water annually depleted
from the Colorado River system
- Loss of potential southwestern willow
flycatcher habitat

Issue No. 2 - How would the Narrows
Project affect wildlife resources?

The project area provides habitat for a wide
variety of wildlife species ranging from deer
and elk to birds and small mammals. There
is concern that the proposed project may
disrupt the migration routes and feeding
areas for some small animal and bird species,
including some neotropical species.

Indicators for this issue:

- Number of habitat units lost for specific
indicator wildlife species (i.e., ungulates,
small mammals, neotropical migrants,
and Utah State sensitive species)

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Author: W. J. ... Subject: ... Date: ...
(What about SR-31?)

I did not see any evaluations on the possible new route for SR-264 or an analysis to allow the granting of an easement. With all going to go, the easement?

Author: ... Subject: ... Date: ...

Author: ... Subject: ... Date: ...

Author: ... Subject: ... Date: ...

General note - I suspect that you have to many issues and a series and some of them could have been eliminated from analysis by the incorporation of design features.

What about SR-31?

I did not see any evaluations on the possible new route for SR-264 or an analysis to allow the granting of an easement. Who is going to grant the easement?

We won't need to do NEPA to make the changes to the allotments. We can change boundaries, grazing systems, etc as permit administration

General note - it appears that you have to many issues and it seems like some of them could have been eliminated from analysis by the incorporation of design features.

1.7 ENVIRONMENTAL ISSUES
ASSOCIATED WITH THE
PROPOSED ACTION
ALTERNATIVE

The issues identified through the initial
scoping effort are listed below. The issues
are phrased as questions. Following a brief
description of the issue, indicators or
measures are suggested that may be used to
compare how the alternatives answer the
question. Indicators measure change from
the present condition. Chapter 2 contains a
comparison summary of the alternatives and
their responses to the issues. Chapter 3
presents the effected environment and
the predicted effects as they relate to the
resource issues.

Under this alternative, the Narrows Dam and Reservoir would not be constructed. Without the dam construction, there would be no need to relocate SR-264; and there would be no recreational facilities constructed at the reservoir site. The East Bench, Oak Creek, and Upper Cottonwood Creek Pipelines would not be built. The existing Narrows Tunnel would be rehabilitated at some future date and with other funding. The Cottonwood Creek Irrigation Company could not risk complete collapse and failure of the tunnel. If the tunnel were to collapse, the Cottonwood Creek Irrigation Company would have to acquire some type of emergency funding and would be required to repair it. The demand on municipal water supplies in Fairview, Mount Pleasant, Spring City, and Moroni would continue to increase as supplies for outdoor municipal uses run short and as the population increased. Most likely, there would be a conversion of agricultural water to municipal use as the demand for municipal water increased with a growing population.

Water conservation measures would continue to be implemented. These conservation measures would reduce average shortages on irrigated farmland to about 29.5% or about 15,250 acre-feet per year. Implementing new conservation measures most likely would reduce irrigation return flows now supplying wetlands, aquatic habitat, and downstream users by an estimated 3,500 acre-feet per year.

There would be no wetlands, wildlife, or fisheries mitigation measures implemented under the No Action Alternative because there would be no impact to existing wetlands and wildlife habitat. Streamflows in Gooseberry and Fish Creeks would remain unaltered from their present state. Under this plan, no flatwater fishery would be developed in the proposed reservoir basin.

2.2.2 Proposed Action Alternative

If Reclamation approves the SRPA loan and Congress appropriates the necessary funds and lands, a supplemental water supply would be developed for municipal water users and agricultural use in north Sanpete County under the Proposed Action. This additional water supply would satisfy the 1984 Compromise Agreement.

The Proposed Action would provide north Sanpete County an average annual supply of 4,281 acre-feet of supplemental irrigation water for 15,420 acres of presently irrigated farmland and 855 acre-feet of water for municipal use. The project would include construction of the 17,000 acre-foot Narrows Dam and Reservoir on Gooseberry Creek, pipelines to deliver the water to existing water distribution systems, rehabilitation of the existing 3,100 foot Narrows Tunnel, and relocation of 2.9 miles of State Road (SR) 264. The dam would be 120 feet high with a crest length of 550 feet and crest width of 30 feet.

The Narrows portion of the Gooseberry Project Plan would include a transmountain diversion of water from the Gooseberry Creek drainage of the Price-Green-Colorado River Basins to the San Pitch-Sevier River of the Great Basin. Geographically, the project facilities are located in close proximity to the drainage divide between the Price River system and the San Pitch River system. The general location is shown on the location map at the front of this document.

The Price River flows southeast to the Green River, a tributary of the Colorado River. The San Pitch River flows southwest to the Sevier River, which is completely consumed in the Bonneville Basin, a part of the arid Great Basin. The county line dividing Sanpete County and Carbon County is located more than 6 miles downstream

A map is needed to show the location of federal and private land that will be impacted by this alternative.

Section 1.4.2 discusses how implementing efficiency improvements would reduce the amount of irrigation water losses. The efficiency improvements would be expected to reduce water available to wetlands, aquatic habitat, and downstream users by up to 3,500 acre-feet per year. However, inefficiencies in project water would offset the 3,500-acre-foot-per-year reduction by about 1,820 acre-feet per year. This would result in a net loss to wetlands, aquatic habitat, and downstream users of about 1,680 acre-feet per year.

2.2.2.2 Construction Features and Project Operations

2.2.2.2.1 General

The principal construction features of the Narrows Project would consist of one reservoir and three pipelines. Narrows Dam and Reservoir (Figure 2-3) would be constructed on Gooseberry Creek and would provide storage for the project water supply. Oak Creek Pipeline would convey water from an existing diversion dam located on Cottonwood Creek northward to the Oak Creek Irrigation Company, north of the community of Fairview. The East Bench Pipeline would convey project water from the same existing diversion dam on Cottonwood Creek southward to areas of use along the east bench. Upper Cottonwood Creek Pipeline would carry project water from the Narrows Tunnel outlet to a point 300 feet downstream from the confluence of Cottonwood Creek and Left Hand Fork to protect the stream channel above that point from increased flows that would occur without the pipeline.

Other important features of the project would include rehabilitating the existing Narrows Tunnel; relocating SR-264; modifying parts of Forest Development Road (FDR) Nos. 50124, 50150, and 50225;

and modifying the snowmobile parking area along FDR No. 50150. Recreation facilities, primarily for boating, fishing, camping, and picnicking, would be provided at Narrows Reservoir to help satisfy projected recreation needs in the area. Title to the dam and permanent water facilities would be in the name of SWCID. Title to the land underlying those facilities and associated recreation facilities would remain in the name of the United States and under Reclamation management.

Specific proposed fish and wildlife mitigation measures include the following:

- ✦ Restoring year-round flows in two small tributaries to Gooseberry Creek (above the proposed Narrows Reservoir); providing minimum instream flows of 1.0 cubic feet per second (cfs) in Gooseberry Creek below Narrows Dam.
- ✦ Providing a multiple-level outlet at Narrows Dam to regulate the temperature of releases to Gooseberry Creek from Narrows Reservoir.
- ✦ Modifying and/or stabilizing streambanks and associated riparian zones along Middle Gooseberry Creek.
- ✦ Providing releases from the Narrows Reservoir into Gooseberry Creek for flushing flows and for fish habitat during critical periods.
- ✦ Acquiring and/or improving stream channel for fish habitat (Middle Gooseberry Creek).
- ✦ Providing winter releases to Cottonwood Creek.
- ✦ Providing summer flows in lower Cottonwood Creek.

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Author: erinmshaw | Subject: Draft EIS | Date: 10/27/2013 4:42:54 PM
Who is going to inspect the dam and be responsible for dam safety and compliance with maintenance etc.
Author: erinmshaw | Subject: Draft EIS | Date: 10/27/2013 4:44:32 PM
Who will manage the recreation facilities going forward? Where will the fees from the recreation facilities go?

Who is going to inspect the dam and be responsible for dam safety and compliance with maintenance etc.

Who will manage the recreation facilities going forward? Where will the fees from the recreation facilities go?

would be installed near the tunnel inlet to regulate releases through the tunnel. Following rehabilitation, the tunnel would have a 60-cfs discharge capacity.

Remote control of the Narrows Tunnel operating gate would be provided to regulate automatically the releases through the tunnel. These controls would be coupled to an automated stream gauging station on Cottonwood Creek. The streamflow in Cottonwood Creek would be monitored constantly by these controls. As the streamflow increased during high runoff events such as thunderstorms, the tunnel operation would be discontinued when the flow exceeded 100 cfs near the mouth of the canyon. An automated gauging station would measure flow data and communicate with an automated gate controller at the tunnel. Under this operating regime, the project flows through the tunnel would not increase streamflows above what is considered safe for channel stability. Increased flows under project conditions would be well below the 50-year channel-forming discharge.

2.2.2.2.6 State Route 264 Relocation.—Narrows Reservoir would inundate about 0.8 mile of SR-264, which provides access between Fairview and Scofield, Utah. Under the proposed project, this road would be routed around the perimeter of the existing snowmobile parking area. The road would be relocated to include 0.3 mile of FDR No. 50150 and No. 50124 (gravel road) to Lower Gooseberry Reservoir and by constructing 2.6 miles of new road and providing asphalt surfacing for the entire length of the relocation. This new road would cross Narrows Dam. The road relocation would increase the travel distance between Fairview and Scofield by 1.2 miles. The relocated road would have a total pavement width of 24 feet and would be designed to the same standard as the existing road.

2.2.2.2.7 Recreation Facilities.—Public recreation facilities for the Narrows Project would be located along the northwest shore of Narrows Reservoir (see figure 2-3). The facilities would include a boat ramp, boat slips, a day use area with 10 picnic sites, restroom facilities, and a 60-unit campground. Access for the handicapped would be provided. All recreation facilities and water systems (pansurface source) would be constructed to USDA Forest Service standards. The water source for the recreation facilities would be required to meet State of Utah drinking water standards. Although a formal agreement has not been reached, it is anticipated that USDA Forest Service would administer the recreation facilities at the Narrows Reservoir under an operation agreement with SWCD and Reclamation. Title to the recreation facilities would remain in the name of the United States.

2.2.2.2.3 Fishery Measures

A total of 11 fishery mitigation measures have been included in the project to mitigate for adverse impacts. To the extent possible, an attempt was made to mitigate "in place" and "in kind."

2.2.2.2.3.1 Restore Streamflow in Gooseberry Creek Tributaries.—Implementing this aquatic mitigation procedure would consist of altering the release of water from Fairview Lakes, which are owned and operated by CGIC. Presently, during the spring runoff period, water is stored in Fairview Lakes and released for irrigation use in the Fairview area. This release is a transbasin diversion of water to the San Pitch River drainage. With the historic operational pattern, the small unnamed tributaries to Gooseberry Creek located downstream from Fairview Lakes are dry several months each year. This

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mitigation measure involves providing year-round releases, averaging about 2.6 cfs, from Fairview Lakes into two of these tributaries to Gooseberry Creek. This amounts to a 1.3-cfs average flow per channel. The total annual amount of water that is released from Fairview Lakes would not be changed. However, the flow would be dispersed during the entire year rather than the present 18- to 20-week discharge period, resulting in a higher water level in the lakes for more of the irrigation season.

Water released from Fairview Lakes during the year would be captured and stored in Narrows Reservoir. Upon notification by the CGIC, the Fairview Lakes water in Narrows Reservoir would be released through the Narrows Tunnel to the San Pitch River drainage.

This mitigation measure would provide not only aquatic mitigation benefits to the Narrows Project but also both aesthetic and recreational benefits to Fairview Lakes. These benefits would be a result of CGIC being able to maintain the lakes at higher water levels during more of the prime summer recreational season.

SWCD would be responsible for entering into operating agreements necessary to implement these year-round releases. SWCD also would ensure that the releases were made according to environmental commitments. Approval of a loan under the SRPA would be contingent upon securing these agreements with CGIC and an endorsement of the environmental commitments by SWCD.

Implementing this mitigation measure would result in creating approximately 2.3 stream miles of spawning and rearing habitat for cutthroat trout.

2.2.2.2.3.2 Provide Minimum Flows Below Narrows Dam.—The project plan calls for a 1.0-cfs minimum year-round release from

Narrows Reservoir to Gooseberry Creek

That flow, combined with flows from springs located immediately below the dam, would be expected to produce a streamflow of at least 1.5 cfs at the Gooseberry Campground. If the flow at the campground is less than the expected 1.5 cfs, then up to an additional 0.25 cfs would be released to help achieve that flow rate.

2.2.2.2.3.3 Provide a Multiple-Level Intake at Narrows Dam.—A multiple-level intake would be provided at Narrows Dam to regulate the temperature of water released to Gooseberry Creek. Each of the three intakes, planned at elevations 8,640; 8,660; and 8,680 feet, would be designed with a 10.0-cfs capacity.

2.2.2.2.3.4 Stabilize Streambanks Along Middle Gooseberry Creek.—This mitigation measure would involve modifying Gooseberry Creek channel between Lower Gooseberry Reservoir and Narrows Dam to provide better habitat with the reduced flows. It is expected that the channel eventually would narrow by itself due to the decreased flow. However, to expedite the process, certain manmade improvements would be made.

Two alternative methods of accomplishing this mitigation measure were considered. The first method, which was eliminated from consideration due to its more invasive approach, would involve using earthmoving equipment to place fill material within the existing high water line of the stream to narrow the channel.

The second and selected alternative method would involve a less intrusive approach, which would consist of installing a variety of fish habitat enhancement structures in the existing stream channel. These structures could include cover logs, depositional structures, organic riprap treatments, rock clusters, rock deflectors, and rock weirs.

Author: mchambers Subject: Study Notes Date: 10/15/2019 11:45 AM

From: Jennifer Hill (on behalf of the respondent)

Author: mchambers Subject: Study Notes Date: 10/15/2019 11:45 AM

From: Jennifer Hill (on behalf of the respondent) The FS would expect to see more discussion on what the problem is, why it's a problem and how the mitigation relieves the problem.

Will this level of flow support the fisheries?

It isn't clear what this is a mitigation for and how it mitigates the problem. The FS would expect to see more discussion on what the problem is, why it's a problem and how the mitigation relieves the problem.

Narrows Project
Supplemental Draft EIS

Example sketches of several of these enhancement structures are shown in figures 2-4 to 2-7. The objectives of these various structures would be to provide new pool habitat, hiding cover, high flow refuge area, scour holes, and spawning habitat for trout as well as a minimum level of channel erosion control.

Prior to SWCD constructing these improvements, SWCD would coordinate with the USDA Forest Service, Service, USACE, Utah Division of Wildlife (UDWR), and Utah Division of Water Rights. A qualified fluvial geomorphologist would develop a detailed plan based on the second alternative described above. A 200-foot-wide right-of-way corridor also would be acquired where the stream runs through private land. Fencing also would be provided where needed to protect the stream from livestock. Middle Gooseberry Creek would be used as spawning and rearing habitat for cutthroat trout.

2.2.2.3.5 Provide Flashing Flows and Other Releases to Gooseberry Creek—The project would provide releases from Narrows Reservoir to Gooseberry Creek in excess of the minimum 1.0-cfs release described above. These additional releases would be used to provide additional instream flows or to flush accumulated silt and fine sediments from the streambed to enhance spawning habitat. UDWR has expressed interest in using this water to provide additional inflow to Lower Gooseberry Reservoir during the critical winter period when DO levels in the reservoir are low. The project would provide an average of 300 acre-feet per year of additional water for release to Gooseberry Creek. This water, released from carryover storage in Narrows Reservoir, could be used for fish habitat or flashing flows. The annual volume of 300 acre-feet could be released each year in a single event, or the water could be stored in the reservoir for multiple

years to provide a larger magnitude or longer duration flush. In cooperation with UDWR, SWCD would determine the timing and quantity of water to be released each year. Because this water would be released to Gooseberry Creek, it would not count against the 5,400-acre-foot maximum transbasin diversion.

2.2.2.3.6 Acquire and/or Improve Stream Segments.—This measure would involve improving fishery habitat and/or fencing 11.5 miles of stream in the Price River drainage. Most of these stream segments are on private land; and, therefore, approximately 206 acres of right-of-way, that is a corridor averaging approximately 200 feet wide, would need to be acquired. Fishery habitat improvements such as riparian plantings and some minor channel work would be performed. As part of the 11.5 miles of habitat improvement, about 2 miles of stream would be improved in conjunction with the wetland restoration; and 1 mile of stream would be improved by providing fencing in conjunction with acquiring 640 acres of wildlife habitat adjacent to the Price River below Scofield Reservoir. The various parcels of land would be contiguous with other public lands and would be managed in conjunction with those public lands. Memoranda of agreement (MOAs) would be required between the SWCD and the managing agencies.

Where appropriate, the corridor would be fenced with a four-strand, barbed wire fence, topped with a rail to protect the streambanks and riparian zone from damage caused by grazing. Where the adjacent land is used for grazing, selected stream access points for livestock watering or other alternative livestock watering means would be provided. Stream crossings also would be provided as needed. Table 2-3 lists stream segments that have been recommended for this measure and

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Page: 2-16

Author: rchadwick, S. J. Date: 12/2/2016 5:27:24 PM
Is the acquisition of the additional private land essential to the success of the project? (If so, what happens if the land is not acquired?)

Is the acquisition of the additional private land essential to the success of the project? If so what happens if the land is not acquired?

Table 2-3.—Stream Segments To Be Acquired and/or Improved for Fishery Habitat Proposed Action

Stream Reach	Length of Stream (miles)	Proposed Managing Agency
Price River Basin		
Mud Creek	4.0	UDWR
Winterquarters Creek	2.5	UDWR
Pondtown Creek	2.0	USDA Forest Service
Fish Creek above Scofield Reservoir	1.0	USDA Forest Service
Price River below Scofield Reservoir	2.0	UDWR

the proposed managing agencies. If necessary, additional parcels would be identified and evaluated to achieve the mitigation goal. The streams improved and protected under this measure would provide habitat for all life stages of cutthroat, rainbow, and/or brown trout. The improvements also would enhance wildlife habitat and water quality. A monitoring program would be established to ensure that the stream segments were acquired, improved, fenced, and maintained as planned.

2.2.2.3.7 Provide Winter Releases to Cottonwood Creek.—A release sufficient to provide a 2.0-cfs minimum flow at the confluence of Cottonwood Creek and Left Hand Fork would be made from Narrows Reservoir to Cottonwood Creek to increase the available fish habitat. Water released during the winter months would be stored in Wales Reservoir on a space-available basis. Wales Reservoir is a small reservoir that stores winter runoff from the Upper San Pitch River drainage, including Cottonwood Creek drainage.

2.2.2.3.8 Provide Summer Flows in Lower Cottonwood Creek.—Water would be released in lower Cottonwood Creek at the Cottonwood Canyon mouth to provide 2.0-cfs minimum instream flows at that location.

This measure would provide year-round flows in the stream that would support fish habitat, create a fishery, and enhance the wetland and riparian corridor. In the past, this segment of stream historically has been dewatered during the irrigation season.

2.2.2.3.9 Construct Upper Cottonwood Creek Pipeline.—Upper Cottonwood Creek Pipeline would be constructed as described in the previous section 2.2.2.2.4.

2.2.2.3.10 Provide a Minimum 144-acre Conservation Pool in Narrows Reservoir.—A minimum pool with a surface area of 144 acres containing 2,500 acre-feet of water would be provided in Narrows Reservoir for fish habitat and propagation. This pool would not be drawn upon for project use. At minimum pool, the reservoir would have a maximum depth of 58 feet; and approximately 53 acres of the reservoir would be at least 20 feet deep.

2.2.2.3.11 Reduce External Phosphorus Loading to Scofield Reservoir.—This measure would help improve water quality in Scofield Reservoir by reducing phosphorus loading and would be implemented in conjunction with improving stream segments on tributary streams above Scofield Reservoir. About 9.5 miles of stream segments would be improved. The improvements would consist of bank stabilization, primarily through riparian plantings. Where grazing would occur, the stream segments would be fenced to protect them from potential impacts.

This measure would reduce the amount of sediment and animal waste and, hence, the amount of phosphorus flowing into the reservoir. Historically, fish kills have occurred in Scofield Reservoir due to poor water quality. Phosphorus has been identified as the limiting nutrient in the eutrophication of the reservoir. Phosphorus loading occurs from several factors, including inflow of

5-44

Author: michael.davis Subject: Sticky Note Date: 5/18/2010 10:00:34 AM
P3 - Majority of segments are not on forest lands. Mileage equal to that must be restored or enhanced on adjacent NFS lands

5-45

Author: michael.davis Subject: Sticky Note Date: 5/28/2010 10:02:40 AM
P3 - BOR and SWCD must make sure that levels are sufficient to support fish populations.

5-46

Author: michael.davis Subject: Sticky Note Date: 5/28/2010 10:01:57 AM
provide additional flow doesn't mitigate for de-watering other land on the national forest.

Majority of segments are not on forest lands. Mileage equal to that must be restored or enhanced on adjacent NFS lands
BOR and SWCD must make sure that levels are sufficient to support fish populations.
Provide additional flow doesn't mitigate for de-watering other land on the national forest.

sediments that are naturally high in phosphorus and animal waste. In a report entitled *Scofield Reservoir Restoration Through Phosphorus Control*, the Utah Division of Water Quality concluded that:

"The most pragmatic and effective means to control the further eutrophication of Scofield Reservoir, or possibly to effect a moderate reversal of the eutrophication process, appears to be a reduction of the phosphorus load to the lake."

SWCD would have primary responsibility for implementing all fishery measures described above. SWCD would be responsible for finding and acquiring all lands and rights-of-way and would fund and construct all improvements, such as fencing and stream channel improvements. SWCD would provide water from its water rights or enter into operating agreements for all instream flows described above. This work would be performed concurrently with construction of other project facilities such as the dam, tunnel rehabilitation, and pipelines. All lands and rights-of-way would be acquired, and initial construction of fishery measures would be completed prior to initial filling of the reservoir. SWCD would be responsible to fund all operation and maintenance (O&M) costs of mitigation facilities. SWCD would be responsible to enter into a MOA with UDWB and other appropriate agencies for all fishery measures. The MOA would define clearly the roles and responsibilities of SWCD, UDWB, and other parties for implementing, monitoring, and maintaining the fishery measures.

2.2.2.2.4 Wetlands Measures

Wetlands measures would be included in the project to mitigate unavoidable adverse impacts to wetlands that have been identified with the project. Four alternative wetland

mitigation sites have been identified. The actual mitigation that is implemented could be from one alternative or a combination of alternatives. Proposed wetland mitigation areas are shown in figures 2-8, 2-9, and 2-10. A brief description of each alternative follows. Alternatives are listed in order of priority.

2.2.2.2.4.1 Enhance, Restore, and Create Wetlands Adjacent to Mud Creek Near Scofield Reservoir.—This measure includes the purchase or approximately 220 acres of private land adjacent to Mud Creek, south of Scofield Reservoir. The approximate elevation of this site is 7,700 feet. Some of this land consists of former wetlands damaged by cattle, and the remainder is upland habitat. Existing wetland portions would revert to their natural wetland condition by removing the cattle and allowing the vegetation to grow. The remaining wetlands would be created by other methods (e.g., construction).

To implement wetland mitigation at the Mud Creek site, a preliminary study of the site would use the following steps:

1. Perform wetland delineation mapping of the site to determine the location and quantity of existing wetlands.
2. Install piezometers to determine ground water levels.
3. Install a temporary check dam with a series of piezometers to determine the effectiveness of using check dams to raise ground water levels.
4. Excavate test pits to determine soil types and stratification of soils.
5. Design mitigation measures based on data collection.
6. Perform HEP analysis to quantify premitigation habitat.

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Author: WetlandNet Subject: Fishery MOA Under: WCD/2002-01-01-01-01-01
 2) How does this mitigate for wetlands lost on forest lands? These wetlands are on state land.
 Author: WetlandNet Subject: Fishery MOA Under: WCD/2002-01-01-01-01-01
 2) How does this mitigate for wetlands lost on forest lands? These wetlands are on state land.

How does this mitigate for wetlands lost on forest lands? These wetlands are on state land. Need to coordinate with the Forest especially if any habitat work takes place on the forest

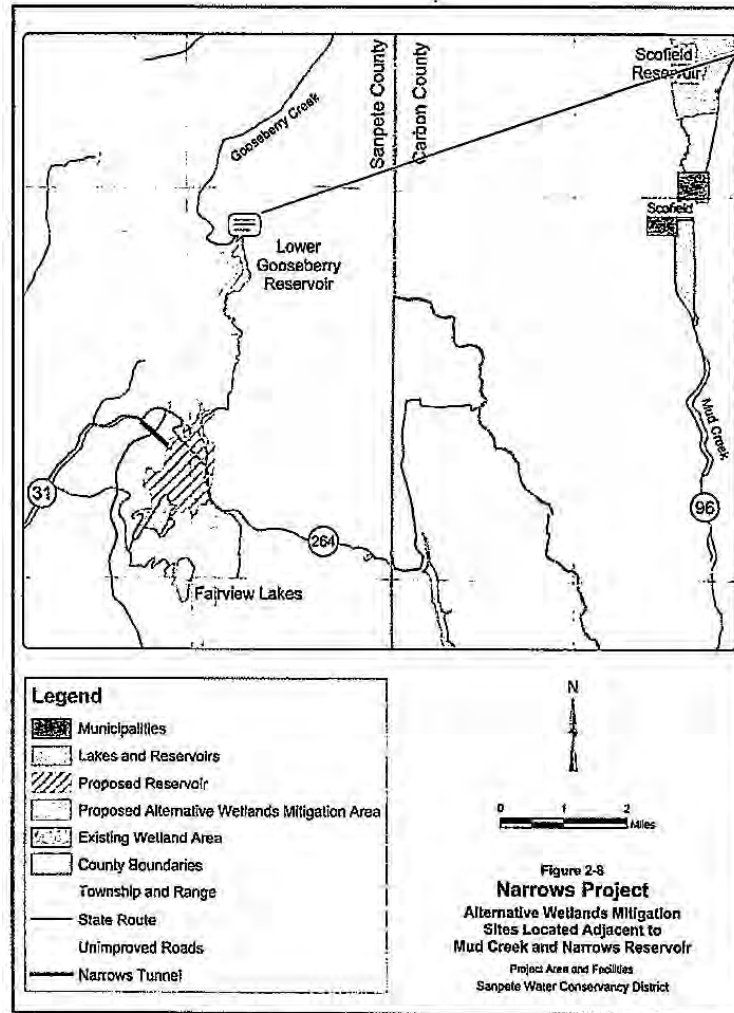


Figure 2-8.—Alternative Wetlands Mitigation Sites Located Adjacent to Mud Creek and Narrows Reservoir.

Chapter 2
The Alternatives Considered,
Including the Proposed Action Alternative

would report such hazardous conditions as potential slide or slump areas that might pose a danger to workers and equipment. All hazardous areas would be roped off and appropriate signs displayed to prevent accidents.

SWCD would develop a safety of dams program that would satisfy the State of Utah requirements. SWCD, with supervision by the State Engineer, would be responsible for monitoring structural performance and conducting safety inspections during construction and initial filling of the reservoir. Criteria would be developed and strictly followed for filling the reservoir and monitoring the safety of the dam. Marker buoys and float lines would be installed around spillway intake structures and other areas that might be hazardous to boaters. In accordance with State Engineer requirements,

a standard operating procedure would be prepared to ensure that the dam was operated in a safe manner. In addition, an emergency action plan would be prepared and distributed to public safety officials. This plan would describe procedures to be followed if an emergency involved the dam.

2.2.2.3 Costs and Financing

The Proposed Action would cost approximately \$40.3 million and would be funded by SWCD, the State of Utah, and a loan from the Federal Government. Of the \$40.3-million cost, about \$7.6 million would be allocated to fish and wildlife enhancement and recreation (table 2-5). These costs are nonreimbursable to the project sponsor. Total financing would be through provisions of the SFRA.

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7. What year(s) is it assumed that construction would occur? The way I read this table, it sounds like the construction costs are for construction from 2006-2008. If that's true then these costs need to be updated to reflect inflation and costs for the year in the future when construction is expected to begin.

What year(s) is it assumed that construction would occur? The way I read this table, it sounds like the construction costs are for construction from 2006-2008. If that's true then these costs need to be updated to reflect inflation and costs for the year in the future when construction is expected to begin.

Table 2-5.—Narrowes Project Cost Comparison of Storage Alternatives Evaluated in Detail¹

	Proposed Action	Mid-Sized Reservoir Alternative	Small Reservoir Alternative
Narrowes Dam and Reservoir	\$ 12,282,000	\$ 10,762,000	\$ 3,212,000
Narrowes Tunnel Rehabilitation	4,021,000	4,021,000	4,021,000
Upper Cottonwood Creek Pipeline	677,000	677,000	677,000
Oak Creek Pipeline	341,000	341,000	341,000
East Branch Pipeline	7,987,000	7,987,000	7,987,000
Recreation area	1,085,000	937,000	881,000
Highway SR-284 relocation	3,252,000	3,252,000	3,252,000
Wetlands, wildlife, and fishery mitigation	4,274,000	4,274,000	4,147,000
Recreation participation (EIS and planning)	950,000	950,000	950,000
SWCD's costs to date	2,818,000	2,818,000	2,818,000
Total construction cost	\$37,127,000	\$36,059,000	\$35,258,000
Estimated interest during construction (IDC)	2,528,000	2,447,000	2,388,000
Total project costs	\$40,255,000	\$38,505,000	\$38,642,000
Average annual water yield of project (acre-feet)	5,380	5,171	4,935
Capital cost per acre-foot of yield	\$7,584	\$7,447	\$7,825

¹ Cost estimates have been inflated from July 2008 to 2006.

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2.2.3.2.2.7 Recreation Facilities.—For this alternative, public recreation facilities would be similar to those provided for in the Proposed Action. The facilities would include a boat ramp, boat slips, and a day-use area. The day-use area would include 8 picnic sites, restroom facilities, and a 50-unit campground. USDA Forest Service would participate in the recreation facility design, and the facilities would be constructed to their standards. USDA Forest Service would operate and maintain the facilities under agreement with SWCD and Reclamation. Title to the recreation facilities would remain in the name of the United States.

2.2.3.2.3 Fishery Measures

A total of 11 fishery measures have been included in the project to mitigate for adverse impacts that have been identified with the project. To the extent possible, an attempt was made to mitigate "in place" and "in kind." Under this alternative, these measures are identical to the same measures as those described in the Proposed Action.

2.2.3.2.4 Wetlands Measures

Wetlands measures would be included in the project to mitigate for unavoidable adverse impacts to wetlands that have been identified with the project. Four alternative wetland mitigation sites have been identified. The natural mitigation that is implemented could be from one alternative or a combination of alternatives. Proposed wetland mitigation areas have been shown previously in figures 2-8, 2-9, and 2-10. A complete description of each alternative was provided in the discussion of the Proposed Action. Modifications unique to the Mid-Sized Reservoir Alternative are discussed below.

2.2.3.2.4.1 Wetlands Adjacent to Mud Creek Near Scofield.—This measure would entail purchasing about 190 acres of private

land adjacent to Mud Creek, south of the town of Scofield, rather than the 220 acres described in the Proposed Action.

2.2.3.2.4.2 Area West of Lower Gooseberry Reservoir.—Under this alternative, about 105 acres of private land west of Lower Gooseberry Reservoir would be acquired, rather than the 120 acres under the Proposed Action. This land would be treated in the same manner as in the Proposed Action.

2.2.3.2.4.3 New Wetlands Adjacent to Narrows Reservoir.—This alternative would be identical to that described in the Proposed Action, except that the target acreage for mitigation would be reduced from 100 to 81 acres.

2.2.3.2.4.4 Manti Meadows.—This alternative would be identical to that described in the Proposed Action, except that the target acreage for mitigation would be reduced from 100 to 81 acres.

Wetlands measures would be needed to provide similar wildlife values as those in the 81 acres of wetlands that would be inundated by the reservoir. Careful monitoring of the mitigation sites would be conducted to ensure that the value of the mitigation sites was at least equal to the value of the wetlands lost. This determination would be accomplished by performing HEP analyses of the sites and comparing habitat values.

SWCD would have primary responsibility for implementing the wetlands measures described above and would assume all other responsibilities associated therewith, as described in connection with the Proposed Action.

2.2.3.2.5 Wildlife Measures

The wetlands measures described above would offset any losses to wetland habitat caused by inundation. Impacts to upland

these acres are not on forest service lands

Narrows Project
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sprinklers. About 75% of the land is served by improved conveyance facilities such as pipelines and lined canals and ditches. Based upon these conditions, the diversion requirement was computed to be an average of about 62,900 acre-feet per year for the 15,420 acres of project-eligible lands (see section 1.4.2). With average annual water supplies of 34,200 acre-feet per year, this would leave a shortage of about 28,700 acre-feet per year.

Because of this shortage, certain individuals and canal companies were planning to install, or were currently installing, a variety of efficiency improvements on much of the unimproved portions of project lands. These improvements would be expected to be in place by the projected date of completion for the proposed Narrows Project. These improvements would consist mainly of additional pipe delivery and sprinkler irrigation systems. Land leveling is often used as a technique to improve onfarm efficiency; however, due to the topography and shallow depth of soil, land leveling is generally not practical or economically feasible in the project area. Drip irrigation systems, which are highly efficient, are not considered practical for the alfalfa/grain rotation crops that are grown in the project area. With completion of these improvements, most of the cost-effective measures would have been implemented. There still could be limited opportunities for some localized improvements.

As a result of these efficiency improvements, diversion demands would be expected to be reduced from an average of 62,900 to about 51,700 acre-feet per year. This would be an average reduction in diversion demand of about 11,200 acre-feet per year. (In previous documents, this reduction has been reported to be 8,000 acre-feet per year but now has been revised based upon updated crop consumptive use data.) Even with these

improvements in place, remaining shortages would be estimated at about 15,250 acre-feet per year. With this amount of shortage, significant soil moisture deficits would continue to seriously impact crop growth and production.

It should be noted that the 11,200-acre-foot reduction in diversion demand is not new water. New water would become available only if demands could be reduced below available supplies. In this case, efficiency improvements would make more use of the existing water supply available to the plants by reducing the amount of water lost to the plants because of evaporation, seepage, and spills from the carriage system; deep percolation through the root zone; and runoff from the ends of the fields. There would be two consequences of implementing efficiency improvements:

1. More of the existing water supplies would become available to support plant growth and development. Here, an additional 3,500 acre-feet per year of existing water supplies would be available to the plants.
2. Conversely, 3,500 acre-feet per year, less the amount previously lost by evaporation, no longer would be available as return flows to support wetlands, aquatic habitat, and downstream users.

As mentioned previously, most of the remaining cost-effective efficiency improvements would be implemented within a relatively short timeframe independent of the Narrows Project or any other organized program. In essence, their implementation would be a component of the No Action Alternative and would not satisfy the need for additional supplemental water.

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Author: haremoids Subject: Comment on Text Date: 5/31/2010 1:57:39 PM
What's the anticipated date for having all of these improvements that are currently in the works completed?
Author: haremoids Subject: Comment on Text Date: 5/31/2010 2:00:06 PM
If this statement is true, then it should be analyzed as part of the no action alternative and the analysis should be changed to reflect this information. In other words, the short-fall needed is significantly reduced from what has been analyzed.

What's the anticipated date for having all of these improvements that are currently in the works completed?

If this statement is true, then it should be analyzed as part of the no action alternative and the analysis should be changed to reflect this information. In other words, the short-fall needed is significantly reduced from what has been analyzed.

2.3.3.1 Reasons Eliminated from Further Consideration

This is an ongoing activity that is a component of the No Action Alternative, the Proposed Action, and any other alternative that might be considered.

Implementing efficiency improvements does not adequately satisfy the need for additional supplemental irrigation water.

Efficiency improvements do not provide significant relief for water shortages during the late irrigation season when supplemental water is needed the most.

With implementing the planned efficiency improvements, the opportunity for additional large-scale conservation programs is nonexistent.

2.3.4 Mammoth Damsite Alternative

Several alternative dams site locations were evaluated and studied during the early stages of project planning. Because of the topography of many of these alternative dams sites and technical difficulties relating to dam length and height and storage capacity, only two of the sites were further evaluated. The first of these is the dams site contemplated in the original Gooseberry Project.

The original Gooseberry Project transmountain diversion plan contemplated a reservoir site generally located in the south half of section 6 and part of sections 7 and 18, T. 13 S., R. 6 E., Salt Lake Base and Meridian, commonly referred to as the Mammoth reservoir site (figure 2-15). Through direct diversions and storage in the Mammoth reservoir, the original project plan contemplated a transmountain diversion of up to 30,000 acre-feet of water per year.

Through public reviews, the Service, among others, requested moving the Gooseberry dams site from the proposed Mammoth site to the proposed Narrows site to protect fishery values. In 1984, UDWR made a similar request and specifically requested the exclusion of Cabin Hollow Creek from the Gooseberry Project. Next, using Brooks Canyon Creek water became impractical because the existing wetlands are dependent upon its water supply. The amount of water available from this source did not justify the impact on the wetlands.

In 1984, Reclamation, SWCD, the Price River Water Users Association, and the Carbon Water Conservancy District entered into a Compromise Agreement that set forth conditions upon which water rights for both the Scofield Project and the Narrows Project would be established. The 1984 Compromise Agreement established priorities, quantities of flow, storage capacities, location of storage facilities, and points of diversion for these projects. The agreement recognized the above environmental concerns and expressly excluded the Mammoth dams site as a location for project storage facilities. The 1984 Compromise Agreement was a resolution of many years of disagreement between Carbon and Sanpete water interests over the Gooseberry Project. In 1985, the Utah State Engineer approved both the Narrows portion and the Scofield portion of the Gooseberry Project Plan water rights. Both approvals were expressly made subject to terms of the 1984 Compromise Agreement. Thus, no water right is now or likely would be approved in the future for a project constructed at the Mammoth dams site without amendment to the compromise agreement and approval of associated water right changes.

See my comment above. The alternatives and existing condition information need to be revised to reflect this.

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Table 2-8.—Comparison of the Narrows Project Alternatives and the Project Issues (Continued)

Issues	No Action	Proposed Action	Mid-Sized Reservoir	Small Reservoir
WATER QUALITY				
Change in Scofield Reservoir Trophic State Index	0	+3.5	+3.5	+3.5
Change in average phosphorus level in Scofield Reservoir based on external phosphorus loading (milligrams per liter)	0	0.0026	+0	+0
WETLANDS				
Acres of wetlands lost	0 acres (without mitigation) 0 acres (with mitigation)	100 acres (without mitigation) 0 acres (with mitigation)	81 acres (without mitigation) 0 acres (with mitigation)	72 acres (without mitigation) 0 acres (with mitigation)
RIPARIAN AND AQUATIC HABITATS				
Miles of stream lost due to inundation of the reservoir	0	5.3 miles	4.8 miles	4.8 miles
Number of miles of stream affected by flow:				
▪ Increase in flow	0	4.9 miles	4.9 miles	4.9 miles
▪ Decrease in flow	0	16.1 miles	16.1 miles	16.1 miles
RECREATION AND VISUAL				
Change in projected fisherman days in Scofield	0	-6,800	-5,400	-5,800
Increase in developed recreation visitor days at Narrows (including fishing)	0	+46,400	+37,600	+27,600
Increase in dispersed recreation visitor days at Narrows (including fishing)	0	+910	+740	+560
Change in visual quality objective	Partial retention	Partial retention	Partial retention	Partial retention
CULTURAL RESOURCES				
Sites inundated or otherwise impacted	0	3	3	3
SOCIAL AND ECONOMIC				
Number of jobs (Carbon, Sanpete) created during construction	0	50-100	50-100	50-100
Change in farm income	0	11% increase	10% increase	10% increase
Change in available water supply				
▪ Sanpete County	0	+5,318 acre-feet	+5,157 acre-feet	+4,935 acre-feet
▪ Carbon County	0	-439 acre-feet	-457 acre-feet	-457 acre-feet

Author: kareynolds Subject: Comment on Text Date: 5/21/2010 2:31:03 PM
How is this number known if the entire area has not been surveyed?

Author: kareynolds Subject: Comment on Text Date: 5/21/2010 2:32:08 PM
What's the change for Carbon County?

How is this number known if the entire area has not been surveyed?
What's the change for Carbon County?

Affected Environment/Predicted Effects

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1994, March 1997, and February 1999) for the Narrows Project in accordance with Section 7(c) of the Endangered Species Act of 1973 (appendix C). Federally listed and otherwise protected species addressed in the assessment included: bald eagle (*Haliaeetus leucocephalus*); Colorado pikeminnow, (*Ptychocheilus ichtus*); bonytail chub (*Gila elegans*); humpback chub (*Gila cypha*); and razorback sucker (*Xylocheilichthys texensis*).

The Colorado pikeminnow evolved as the main predator in the Colorado River system. Larval pikeminnow measuring less than 40 millimeters (mm) subsist on diets of plankton and macroinvertebrates; pikeminnow between 40 and 80 mm begin to become piscivorous (fish eating); and those measuring more than 80 mm are entirely piscivorous. Fish less than 50 mm are considered larval or young-of-the-year (YOY) fish. The Colorado pikeminnow is the largest cyprinid fish (minnow family) native to North America and, during the predesilverment period, may have grown as large as 6 feet in length and weighed nearly 100 pounds. The Colorado pikeminnow currently occupies about 1,000 river miles in the Colorado River system and is presently found only in the Upper Colorado River Basin above Glen Canyon Dam. Since 1995, as many as 20 adult pikeminnow, 1 in breeding condition, have been caught in the Price River and individually marked. It is

3.1.1 Affected Environment

A biological assessment of potential effects on endangered, threatened, and candidate wildlife and fish species was completed in October 1991 (three amendments—July

3-1

currently unknown whether Colorado pikeminnow use the Price River year round. Colorado pikeminnow have been located in the Price River from April to October. Their known range in the Price River extends from the confluence with the Green River upstream almost 90 miles to the Farham Diversion near Wellington. Further study is needed to determine the pikeminnow's seasonal use of the Price River and to identify the extent to which pikeminnow use the Price River.

Little is known about the biological requirements of the bonytail chub, as the species greatly declined in numbers in the Upper Colorado River Basin shortly after 1960. Bonytail are considered extremely rare or functionally extirpated from the Upper Colorado River Basin. Occasional captures of *Gila* individuals show bonytail characteristics; however, no known populations exist.

The humpback chub generally does not make migrational movements in the Upper Colorado River and tends to reside throughout the year within a limited reach of river. The species is found in narrow, deep canyon areas and is relatively restricted in distribution, seldom leaving its canyon habitat. None have been found in the Price River.

Historically, the razorback sucker was abundant throughout the Colorado River Basin. At present, the only concentrations occur in the Green River in the upper basin and Lake Mojave in the lower basin. Catch-effort estimates suggest that adult razorback suckers are rarer than other native suckers and the endangered Colorado pikeminnow. An immediate goal for razorback sucker recovery is to prevent the species' extinction in the wild. A draft recovery plan has been developed for the razorback sucker.

The Service wrote to Reclamation, identifying the southwestern willow

flycatcher (SWWF) as an additional endangered species present at a site known as Fish Creek, in the proximity of the Narrows Project, and advised Reclamation that an amendment to the biological assessment would be necessary. An amended biological assessment was submitted to the Service on February 3, 1999. A final *Recovery Plan for the Southwestern Willow Flycatcher* was prepared by Region 2 of the Service and signed August 30, 2002.

Based on recent information, the Service "believes that the willow flycatcher found at the Fish Creek site is not the endangered subspecies, the southwestern willow flycatcher." No discussion was offered specifically in reference to the endangered subspecies, *E. t. extimus* from the Service. To date, the following information was used to identify the subspecies:

- ♦ The willow flycatcher subspecies inhabiting the riparian corridor in the proposed Narrows Project proximity is located at the extreme northern boundary of *E. t. extimus* but within the range of *E. t. adustus*, an unlisted species. Experts suggest that the central part of the State of Utah is more likely an area of intergradation between *E. t. extimus* and *E. t. adustus* (Behle, 1985).
- ♦ Research data confirms that this willow flycatcher population is not likely the endangered *E. t. extimus* subspecies but is more likely to be *E. t. adustus* (Eben Paxton et al., 2008). In 2000, Eben Paxton finalized a thesis covering this work entitled "Molecular Genetic Structuring and Demographic History of the Willow Flycatcher."
- ♦ Vocalization analysis has determined the population to be *E. t. adustus* (personal communication, Dr. Jim Sedgwick, spring 1999). However, these results have yet to be published or peer reviewed.

Where are your citations for this data? Does this reflect the most recent surveys?

10 percent of the total depletion charge as identified in the January 9, 1995, Biological Opinion.

Reliance on the RIP to serve as the reasonable and prudent alternative for project impacts is dependent upon sufficient progress toward recovery being made by the RIP. In the event sufficient progress is not made by the RIP, re-initiation of consultation would be required. Payment of the depletion charge would be made by SWCD prior to beginning construction.

Initially, the Service issued a biological opinion in March 1992. Consultation was re-initiated in 1994 as a result of the Service's designation of critical habitat for the four endangered Colorado River fishes and again in 1995 after new information arose about the presence of Colorado pikeminnow in the Price River. The Service issued a biological opinion in January 1995, an amended biological opinion in October 1995, a biological opinion on December 13, 1999, and the final biological opinion on August 24, 2000, which addresses project impacts to designated critical habitat and the Price River. As an element of the reasonable and prudent alternative to the Narrows proposal, the Recovery Program was directed under the 2000 biological opinion to fund a study to determine seasonal endangered fish use in the Price River and develop recommendations for year-round instream flow requirements in the Price River for Colorado pikeminnow. The Recovery Program has completed field investigations to address this element of the reasonable and prudent alternative and is planning to release a summary of flow requirements for internal committee review and approval during autumn 2009.

Because the project would result in a depletion of water to the Price River and reduced spills from Scofield Reservoir, there is, at this time, some uncertainty about what effect the project would have on the timing.

5-53

Author: kareynolds Subject: Comment on Text Date: 5/21/2013 3:46:15 PM
Where is the citation for this information?

This would result in a one-time contribution of \$88,542 (4,841 acre-feet multiplied by 2009 depletion charge of \$18.29) to the Recovery Program. Other conservation measures described for the Proposed Action also would be implemented under this alternative.

Under provisions of the Endangered Species Act, there would be no irreversible impacts to endangered species as a result of implementing the Small Reservoir Alternative. In the event sufficient progress was not achieved under the RIP, re-initiation of consultation would be required to discuss additional conservation measures.

The impacts to the SWWF under the Small Reservoir Alternative would be the same as with the Proposed Action but proportionately reduced.

3.1.4 Conservation Species Impacts

The spotted frog is not a federally listed species. However, potential project impacts to the species have been considered. A survey of historic spring and wetland habitat along the San Pitch River was conducted, and spotted frogs were found to be present within the project area. Increased flows in the San Pitch River associated with any of the construction alternatives of the project could benefit the springs and wetlands that comprise spotted frog habitat along the San Pitch River by increasing water quantity. On the other hand, if spotted frog habitat receives return flows from irrigation, habitat quality could be diminished by virtue of the conservation measures. If a construction alternative is implemented, the net effect of the project, together with the conservation measures, would likely be a slight net reduction dispersed over a large area.

Three fish species, including roundtail chub, bluehead sucker, and flannelmouth sucker,

are Utah State-listed sensitive species. Although roundtail chub historically inhabited the Price River, they have been extirpated from the system. The bluehead sucker and the flannelmouth sucker exist in the Price River below the Farnham Diversion Dam, which is approximately 3 miles southeast of Wellington, Utah. This structure effectively eliminates upstream fish migration. Reaches of the Price River below this structure are a significant distance from the Proposed Narrows Dam. Effects to flows associated with this project would be attenuated to the point of insignificance as measured at the Farnham Diversion Dam. Therefore, the proposed project would have no effect on these fish species.

3.2 WILDLIFE

3.2.1 Affected Environment

The wildlife species found in the general project area are common in the Great Basin Desert valleys and Rocky Mountain Range. There are about 364 species of terrestrial vertebrates that may inhabit the project area. Approximately 88 bird species and 33 mammal species may use the habitats that would be disturbed by the proposed project.

3.2.2 Methodology and Impact Indicators

The method used to evaluate the project is known as the Habitat Evaluation Procedure—a "species habitat" approach to impact assessment and habitat quality. The program uses selected species as indicators to evaluate habitat for a host of other species, assuming that these indicator (evaluation) species are functioning units of part of an ecosystem. Impacts to a particular indicator species assume that there also would be impacts to the group of the species it represents.

Where is the citation for this information?

Under the Small Reservoir Alternative, wetland and upland wildlife habitat mitigation measures would be similar to those described under the Proposed Action, except that the amount of acreage would be smaller, as described in chapter 2. The proposed wetland mitigation areas are in kind, and a detailed mitigation plan would be developed and designed in conjunction with the Section 404 permitting process.

Because the wetland and upland wildlife mitigation measures are intended to provide full mitigation for project impacts, there would be no residual impacts.

3.3 WATER RESOURCES

3.3.1 Affected Environment

Gooseberry Creek and its three unnamed tributaries are located high in the Price River drainage. This tributary of Fish Creek flows directly into Scofield Reservoir (see the location map at the front of this document). Other tributaries to Scofield Reservoir include Mud Creek and Pondtown Creek. The Price River, which flows out of Scofield Reservoir, is a tributary of the Green River—a tributary of the Colorado River. These three rivers are all located in the Colorado River Basin.

Cottonwood Creek, located in the San Pitch River Basin, is located on the opposite side of the divide from Gooseberry Creek.

Cottonwood Creek and the San Pitch River are located in the Sevier River subbasin of the Great Basin.

Typical of Wasatch Mountain streams, flows in these creeks are greatest in the spring, when snowmelt runoff is peaking. Peak flows during May and June are estimated to range from 15 to over 100 cfs in Upper Gooseberry Creek near the proposed damsite. The flow declines considerably in late

summer and reaches a minimum in late fall or winter. Late-season flows are estimated to be 1.5 to 5 cfs in Upper Gooseberry Creek.

The average annual natural runoff volume of Upper Gooseberry Creek, near the proposed damsite, is 9,032 acre-feet. Of this amount, an average of 1,815 acre-feet presently is stored in Fairview Lakes and diverted transmountain to Cottonwood Creek through the Narrows Tunnel. The remaining water continues down Gooseberry Creek to Fish Creek. An average of 35,800 acre-feet per year enters Scofield Reservoir from Fish Creek. The total annual inflow to Scofield Reservoir from all tributaries averages 57,500 acre-feet. The average total contents of Scofield Reservoir are about 42,360 acre-feet. All of these values are for the 1960–2002 hydrologic period.

The Price River below Scofield Reservoir, referred to as lower Fish Creek, has a wide range of flows that vary according to downstream water demands and hydrologic conditions. Releases consist of direct flow right bypasses and Scofield Reservoir storage deliveries for Scofield Project users. Spills occur when the reservoir is full and water flows over the spillway or when releases are made in excess of downstream demands. These total releases and spills have averaged 51,815 acre-feet for 1960–2002 but historically have varied from 13,762 to 154,475 acre-feet. Low flow conditions generally occur from November through March. There are no minimum flow requirements in the Price River, and it is not unusual for the flow below the dam to be completely shut off during winter months. Peak flows below the dam occur in wet years when the reservoir spills. While normal dam releases in June are about 150 cfs, the total releases with these spills have ranged up to more than 1,100 cfs. Since spills are in excess of downstream consumptive use requirements, they usually increase river

5-54

Author: richardk... Subject: Water Resources Date: 5/22/2013 9:13:07 AM
It appears that there wasn't a survey done to identify springs and other ground water resources.
Are there concerns or needs to address water rights by private citizens and the Forest Service?

It appears that there wasn't a survey done to identify springs and other ground water resources. Are there concerns or needs to address water rights by private citizens and the Forest Service?

average reservoir storage. Impacts to regulated releases from Scofield Reservoir for Scofield Project use would occur only during multiple successive drought years, such as occurred in the early 1960s, 1990s, and 2000s. Impacts to the Price, Green, and Colorado Rivers would result primarily in reduced spills from Scofield Reservoir.

The impacts of the Narrows Project on water resources are most pronounced near the reservoir. About 1 mile of Upper Gooseberry Creek and 4.3 miles of small streams in the proposed reservoir basin would be inundated by the reservoir. In addition, annual flows in the middle 3 miles of Gooseberry Creek between Narrows Reservoir and inflow into Lower Gooseberry Reservoir would be reduced by about 74%. Under the Proposed Action, a 1.0-cfs minimum flow would be made from Narrows Reservoir to Gooseberry Creek to provide a 1.5-cfs minimum flow at the USDA Forest Service campground $\frac{1}{4}$ mile downstream from the proposed damsite. If the 1.5-cfs flow at the campground is not met, up to an additional 0.25 cfs would be released from the reservoir to meet the required flow. Minimum streamflow releases from Narrows Reservoir would eliminate periodic dry stream channels in the Middle Gooseberry Creek segment. An average of 300 acre-feet per year also would be released for channel maintenance or other instream flow purposes.

Flows in Cottonwood Creek would increase during the irrigation season, with the import of project water through Narrows Tunnel. However, during the irrigation season, these flows would be less than peak flows that occur naturally during the spring snowmelt period. The Upper Cottonwood Creek Pipeline would convey these increased flows outside the stream channel between the tunnel outlet and the confluence with Left Hand Fork. About 300 feet below the Left Hand Fork confluence, the project flows would be discharged to the stream. At this point, the

increase in average July and August flows from current conditions would be about 200%.

Depletions to the Price River drainage would average 5,597 acre-feet per year. This amount would consist of 5,227 acre-feet of transbasin diversions and 370 acre-feet of increased evaporation in the Price River Basin. When measured in Gooseberry Creek below Narrows Reservoir, the reduction in annual streamflow varies between 1,760 and 10,200 acre-feet, depending on the storage level of Narrows Reservoir and the magnitude of the streamflow into the reservoir. As shown in table 3-2, the greatest impact would occur during the spring snowmelt runoff period. Releases from Narrows Reservoir to Gooseberry Creek would remain at a minimum of 1.0 cfs; and when the reservoir is spilling or when flushing releases are made, the flow would be greater.

As a result of constructing Narrows Reservoir, the operation of Scofield Reservoir would be altered within the normal historic range. Scofield Reservoir would operate at a lower level with implementing the Proposed Action as shown in figure 3-1. Under project conditions, the average total contents of Scofield Reservoir would be reduced from about 42,360 acre-feet to about 31,500 acre-feet. Average reduction in storage releases to irrigators in the Price area would be about 753 acre-feet per year. Total depletions to the Price River drainage would average 5,597 acre-feet per year. Both the volume and frequency of spills from the reservoir would be reduced. With the No Action Alternative, the average reservoir surface area would be reduced from 2,370 acres to about 2,125 acres. This is about a 10% reduction or about 245 acres of the surface area of the No Action Alternative.

Since Scofield Reservoir would operate at a lower level, there is an increased potential for the reservoir to be drained to the bottom of its

How will this increase effect fish and macoinvertebrates in Cottonwood? Need some more data to support this.

would be greater. These differences in streamflows are shown in table 3-2.

As shown in figure 3-1, Scofield Reservoir Operation Comparison, Scofield Reservoir would operate at a slightly higher level than under the Proposed Action. The average contents would be about 13,049 acre-feet. Average reductions in storage releases to irrigators in the Price area would be about 732 acre-feet per year, rather than 753 in the Proposed Action. Total depletions to the Price River drainage would average 4,841 acre-feet per year as compared to 5,597 acre-feet under the Proposed Action and 5,298 acre-feet under the Mid-Stage Alternative.

Streamflow mitigation measures under the Small Reservoir Alternative would be the same as those described for the Proposed Action, with the exception that no year-round flows would be provided in the tributaries to Gooseberry Creek above the proposed Narrows Reservoir site, and no flushing flows would be provided to Gooseberry Creek.

Under the Small Reservoir Alternative, water supplies in the San Pitch River Basin would increase by an average of 4,315 acre-feet per year due to releases from the proposed Narrows Reservoir. Irrigation water shortages would be reduced to about 11,290 acre-feet per year or about 21.8% of the diversion demand.

The residual impacts of the Small Reservoir Alternative would be similar to those of the Proposed Action, except that slightly fewer miles of stream would be inundated, and Scofield Reservoir would operate at a slightly higher level. Annual reductions in storage releases to irrigators in the Price area would occur only after several successive drought years and would average about 21 acre-feet less than under the Proposed Action (i.e., 732 acre-feet, rather than 753 acre-feet as in the Proposed Action).

3.4 FISHERIES

3.4.1 Affected Environment

Most of the Narrows Project alternatives have the potential to affect aquatic resources in Gooseberry Creek, Fish Creek, three unnamed headwater tributaries to Gooseberry Creek, Cottonwood Creek, Lower Gooseberry Reservoir, Fairview Lakes, and Scofield Reservoir (see the location map). Cottonwood Creek is in the San Pitch River Basin, whereas all of the others are in the Price River drainage. Cottonwood Creek flows into the San Pitch River downstream from Fairview, Utah; but the San Pitch River, within the project area, does not support a sport fishery because of low summer flows.

Flows in Gooseberry Creek, its unnamed tributaries, and Cottonwood Creek presently are affected by the operation of Fairview Lakes, which store water during spring runoff. Water from the lakes is delivered during the irrigation season via one of the unnamed tributary streams and a canal to the Narrows Tunnel that discharges into Cottonwood Creek. The released water then is diverted for irrigation in Sanpete County.

Lower Gooseberry Creek and Fish Creek downstream from the confluence with Gooseberry Creek also are affected by the operation and limited regulation offered by Fairview Lakes. If the project is approved, an operating agreement would have to be negotiated between SWCD and CGIC to regulate seasonal releases from Fairview Lakes in connection with downstream discharges from the Narrows Reservoir.

Aquatic resources vary considerably between the different reservoirs and stream segments that could be affected by the Narrows Project. Fish habitat study reaches are shown in figure 3-4. A summary of aquatic resources present in the different stream segments and

The San Pitch River does support Utah species of concern (S. leethcuside chub) which is a FS R4 sensitive species

reservoirs is provided in the following sections of this document.

3.4.1.1 Gooseberry Creek (UDWR Class 3B – Unique)

Class 3 streams support the bulk of the stream fishing in Utah. Gooseberry Creek provides important spawning, nursery and unique habitat for cutthroat trout. The entire length of Gooseberry Creek has the potential to be affected either by reservoir inundation or by flow alterations. For ease of discussion, the stream has been divided conceptually into three segments—Upper Gooseberry Creek, Middle Gooseberry Creek, and Lower Gooseberry Creek.

The Upper Gooseberry Creek segment extends from the confluence of the three unnamed tributaries near SR-264 downstream 1 mile to Narrows Gorge and averages approximately 11 feet in width. Average monthly flows for average, wet, and dry years are shown in table 3-2. This stream segment supports a natural reproducing cutthroat trout population. The population is comprised of adult, juvenile, and YOY fish. The standing crop of cutthroat trout in this stream segment averages about 38 pounds per acre. This stream segment contains numerous riffle areas that provide cutthroat trout spawning habitat. The value of this stream segment in providing yearling habitat is shown in population estimates of over 450 fish per mile (most were YOY) since 1971. The amount of weighted usable area (WUA, the impact indicator used to determine effects on stream fisheries) for the various cutthroat trout life stages in this stream segment is shown in table 3-3. As shown, this stream segment provides only extremely limited overwinter habitat for adult cutthroat trout. Major factors contributing to the poor habitat include low winter flows and limited pool habitat.

Table 3-3.—Weighted Usable Area for Cutthroat Life Stages in Upper Gooseberry Creek with Existing Flows

Month	Life Stage	Average Weighted Usable Area (1,000 units)
January	Adult	8.4
	Juvenile	1.9
February	Adult	8.4
	Juvenile	1.9
March	Adult	8.7
	Juvenile	1.9
April	Adult	11.3
	Juvenile	3.3
May	Adult	11.7
	Juvenile	2.7
	Spawning	6.0
June	Adult	10.7
	Juvenile	2.5
	Spawning	6.6
July	Adult	13.2
	Juvenile	3.5
	Spawning	1.5
August	Adult	12.2
	Juvenile	3.7
	Spawning	1.3
	Fry	4.7
September	Adult	11.1
	Juvenile	3.0
	Fry	4.8
October	Adult	10.2
	Juvenile	2.0
November	Adult	9.9
	Juvenile	2.0
December	Adult	8.7
	Juvenile	1.9

The Middle Gooseberry Creek segment is 3.0 miles in length and extends from the Narrows Gorge downstream to Lower Gooseberry Reservoir. The Middle Gooseberry Creek segment has more flow than the upper segment because of inflow from numerous springs and seeps within and immediately downstream from Narrows Gorge. In addition, this stream segment receives flow from several tributary streams,

Whose data is this and when was it taken?

including Brooks and Charlie Creeks. Average monthly flows that presently occur at the upper end of this stream segment are shown in table 3-2. This stream segment also supports a self-reproducing population of cutthroat trout.

Aquatic habitat studies have been conducted on this stream segment, and the total amount of WUA for the segment is provided in

table 3-4. As shown, the amount of adult and juvenile cutthroat trout habitat available in this stream segment during the September-March period is extremely limited.

The Lower Gooseberry Creek segment is the longest of the three segments and extends downstream 7.1 miles from Lower Gooseberry Reservoir to the confluence with Fish Creek. Vehicle access to this segment is

Table 3-4.—Monthly Preproject and Postproject Yellowstone Cutthroat Trout Habitat in Middle and Lower Gooseberry Creek During Average Water Year¹

Month	Life Stage	Middle Gooseberry Creek			Lower Gooseberry Creek		
		Preproject	Postproject	Change (%)	Preproject	Postproject	Change (%)
January	Adult	62.9	57.6	-8.4	355.4	344.7	-3.0
	Juvenile	18.0	16.7	-7.2	61.6	60.9	-1.1
February	Adult	62.9	57.6	-8.4	359.0	348.5	-2.9
	Juvenile	18.0	16.7	-7.2	63.0	61.1	-3.0
March	Adult	54.7	57.6	-11.0	359.0	344.7	-4.0
	Juvenile	18.3	16.7	-8.7	62.6	60.9	-2.7
April	Adult	106.2	57.6	-45.8	404.9	393.1	-2.9
	Juvenile	30.1	16.7	-44.5	73.2	68.7	-6.1
May	Adult	205.8	57.6	-72.0	562.1	548.3	-2.5
	Juvenile	91.0	16.7	-81.6	75.0	56.0	-25.3
	Spawning	1.5	0.1	-93.3	0.0	0.0	-
June	Adult	202.6	57.6	-71.6	553.2	548.1	-0.9
	Juvenile	88.7	16.7	-81.2	79.6	56.1	-29.5
	Spawning	0.4	0.1	-75.0	0.0	0.0	-
July	Adult	144.4	57.6	-60.1	430.6	405.3	-5.9
	Juvenile	42.7	16.7	-60.9	71.3	73.4	+2.9
	Spawning	0.9	0.1	-88.9	0.0	0.0	-
August	Adult	127.4	57.6	-54.8	413.9	398.7	-3.7
	Juvenile	36.6	16.7	-54.4	73.0	70.4	-3.6
	Spawning	2.8	0.1	-96.4	0.0	0.0	-
	Fry	57.3	28.1	-51.0	65.3	73.1	+11.9
September	Adult	100.2	57.6	-42.5	397.3	355.4	-10.5
	Juvenile	28.4	16.7	-41.2	69.8	61.6	-11.7
	Fry	44.5	28.1	-36.9	73.6	67.1	-8.8
October	Adult	75.4	57.6	-23.6	362.2	327.4	-9.6
	Juvenile	20.9	16.7	-20.1	63.2	58.0	-8.2
November	Adult	66.4	57.6	-13.3	341.5	323.9	-5.2
	Juvenile	18.8	16.7	-11.2	60.0	57.5	-4.2
December	Adult	64.7	57.6	-11.0	348.5	330.9	-5.1
	Juvenile	18.3	16.7	-8.7	61.1	58.5	-4.3

¹ The amount of WUA is expressed in 1,000 units. Average water year is defined as 1968 flows.

Table 3-8. Monthly Preproject and Postproject Rainbow Trout Habitat in Cottonwood Creek During Average Water Year¹

Month	Life Stage	Pre Q	Preproject	Post Q	Postproject	Change (%)
January	Adult	0.98	1,832	2.98	2,910	+58.9
	Juvenile	0.98	1,456	2.98	1,928	+32.4
February	Adult	1.12	1,926	3.12	2,980	+53.7
	Juvenile	1.12	1,509	3.12	1,943	+28.7
March	Adult	1.4	2,106	3.4	3,056	+45.1
	Juvenile	1.4	1,609	3.4	1,971	+22.5
April	Adult	2.59	2,728	2.59	2,728	+0.0
	Juvenile	2.59	1,864	2.59	1,864	+0.0
May	Adult	31.56	4,254	31.56	4,254	+0.0
	Juvenile	31.56	2,093	31.56	2,093	+0.0
	Spawning	31.56	204	31.56	204	+0.0
June	Adult	33.59	4,202	33.89	4,185	-0.2
	Juvenile	33.59	2,079	33.89	2,077	-0.1
	Spawning	33.59	206	33.89	206	+0.1
July	Adult	17.57	4,481	48.17	4,158	-7.2
	Juvenile	17.57	2,167	48.17	1,953	-9.9
	Spawning	17.57	180	48.17	210	+16.6
August	Adult	15.12	4,448	45.25	4,141	-6.9
	Juvenile	15.12	2,172	45.25	1,977	-9.0
	Spawning	15.12	171	45.25	209	+21.9
September	Fry	15.12	2,822	45.25	2,034	-27.9
	Adult	2.79	2,821	18.56	4,473	+58.5
	Juvenile	2.79	1,897	18.56	2,164	+14.1
October	Fry	2.79	2,915	18.56	2,761	-5.3
	Adult	0.91	1,774	2.91	2,877	+62.2
November	Juvenile	0.91	1,418	2.91	1,916	+35.1
	Adult	1.12	1,926	3.12	2,980	+53.7
December	Juvenile	1.12	1,509	3.12	1,943	+28.7
	Adult	0.98	1,832	2.98	2,910	+58.9
	Juvenile	0.98	1,456	2.98	1,928	+32.4

¹ Weighted usable area (square feet per 1,000 feet). Average water year is defined as 1968 flows.

Author: michael.davis Subject: Sticky Note Date: 5/28/2010 10:51:21 AM
PJ - Whose data is this. Is there more recent data besides 1968?

Table 3-11.—Fishery Impacts and Mitigation Measures: Proposed Action

Impacts	Mitigation Commitment
Stream Fisheries	
Gooseberry Creek tributaries - Loss of 4.3 miles (spawning Yellowstone cutthroat).	Restore year-round flows in 2.3 miles of tributaries and stabilize 3.0 miles of Middle Gooseberry Creek.
Upper Gooseberry Creek - Loss of 1.0 mile (all life stages Yellowstone cutthroat).	Acquire, fence, and improve fishery habitat on the following stream segments:
Middle Gooseberry Creek - 74% reduction in average annual flow for 3.0 miles (all life stages Yellowstone cutthroat).	Mud Creek 4.0 miles
Lower Gooseberry Creek - 43% flow reduction for 7.1 miles. (Decrease of 5% adult and 4% juvenile low flow habitat for Yellowstone cutthroat).	Wintersquarters Creek 2.5 miles
Fish Creek - Average 17% flow reduction of 6.0 miles. (Decrease of less than 1% adult and juvenile low flow habitat for Yellowstone cutthroat. Overall increase of 15% spawning and 3% fry habitat for Yellowstone cutthroat. Decrease of 1.3% adult and 0.5% juvenile low flow habitat for rainbow. Overall decrease of 16% spawning and 2% fry habitat for rainbow.)	Upper Fish Creek 1.0 mile
Upper Cottonwood Creek - No summer flow increase, 2-cfs winter flow provided.	Pondtown Creek 2.0 miles
Lower Cottonwood Creek - Average 162% annual flow increase. Average 200% summer flow increase. Overall increase in habitat of 10 to 20% for rainbow trout adult, juvenile, and spawning. Increase in Yellowstone cutthroat smolt adult habitat of about 20%. Little change for Yellowstone cutthroat juvenile habitat. Average of 41% decrease in Yellowstone cutthroat spawning habitat and decrease of 14% for Yellowstone cutthroat fry habitat. Increase in habitat for all life stages of brown trout.	Price River below Seaford Reservoir 2.0 miles
The number of miles of stream affected by increase in flow is 4.9 miles. The number of miles of stream affected by decrease in flow is 16.1 miles.	Provide 1.0 cfs minimum year-round release into Gooseberry Creek to provide 1.5-cfs flow at Gooseberry Campground. Provide temperature control for releases to Gooseberry Creek.
Reservoir Fisheries	
Seaford Reservoir - Increased potential for poor water quality resulting in reduced loss of some natural reproduction in rainbow trout. Reduced surface area of 274 acres, resulting in reduced standing crop of fish.	Construct Upper Cottonwood Creek Pipeline and provide 2-cfs winter release. Provide 2-cfs minimum flow during irrigation season in Lower Cottonwood Creek.
Lower Gooseberry Reservoir - Increased potential for poor water quality resulting in fish kills.	The project would provide an average 300 acre-feet per year of additional water for releases to Gooseberry Creek for flushing flows and to replenish oxygen content in Lower Gooseberry Reservoir.
Fairview Lake - Lower fishing pressure; less severe drawdown during fishing season and winter.	Reduce external phosphorus loading by improving riparian areas along Mud Creek, Wintersquarters Creek, Upper Fish Creek, and Pondtown Creek. These measures also will improve habitat for all life stages of Yellowstone cutthroat and rainbow trout including spawning. Lost angler days would be replaced by new fishery in Narrows Reservoir.
Narrows Reservoir - New reservoir fishery (overage).	Provide 300 acre-feet of water from Narrows Reservoir to be used for instream flow augmentation in consultation with UDWR.
	Beneficial impact. No mitigation required.
	Would provide approximately 454 acres of flat water fishery.

5-58

5-59

Author: michaelsdavis Subject: Study Note Date: 5/31/2016 11:25:56 AM

49 - What fish populations reside in these creeks?

Author: michaelsdavis Subject: Study Note Date: 5/31/2016 11:26:37 AM

49 - How do you know that this will be sufficient? What research are you basing this statement on?

What fish populations reside in these creeks?

How do you know that this will be sufficient? What research are you basing this statement on?

5-60

For a map showing the wetland communities within the basin study area, refer to figure 3-8.

3.6.2 Methodology and Impact Indicators

A wetlands delineation for the reservoir site was completed in 1991-92 following the procedures outlined in the USACE manual. In 2003, a wetlands delineation verification was performed for a portion of the area within the proposed Narrows Reservoir. This redelineation met the request of USACE that further studies be conducted to bring the original delineation up to the minimum standards set by the Utah Regulatory Office for the acceptance of wetlands delineations. The 2003 delineation was verified by the USACE on January 13, 2004, and was valid until January 13, 2009. Re-verification for this site was performed in 2009.

Approximately 349 acres of the proposed reservoir were verified, which represents 45% of the overall reservoir area.

It was found that the wetlands map, generated in 1992, was generally accurate, but because of methods used to create the map, the actual wetlands acreage was overstated at 100 acres. The original wetlands area within the verification area was shown as 34.78 acres, but the wetlands area in the wetlands delineation verification in 2003 was only 24.53 acres or 71% of the original acreage mapped. The 2003 verification estimated 71 acres of wetland. This 29% reduction in wetlands area is due to the methods used to map the delineation.

In 2009, the overall estimated wetlands were re-verified at approximately 89 acres. It is believed wetlands at the Narrows Reservoir project site may have shrunk from the 1992 to 2008. Because the original wetland delineation of 100 acres was generally accurate, data from that delineation was used

in this SDEIS for mitigation, understanding that it is somewhat conservative compared to the verified delineation of 89 acres.

Because the primary function of wetlands is wildlife habitat, HEP was used to evaluate the wetland values. This is a "species habitat" approach to impact assessment of habitat quality. The program uses selected species for indicators to evaluate habitat for a host of other species, with the assumption that these indicator (evaluation) species are functioning units of part of an ecosystem. Impact to a particular indicator species assumes that there also would be impacts to the group of other species it represents.

HSI were calculated for each evaluation (indicator) species. These indices range from 0.0 to 1.0, with each increment of change identical to the next. An HSI value is linearly related to the carrying capacity of the species. An HSI of "1.0" would represent the optimum habitat for the particular evaluation species, whereas "0.0" would represent habitat that is unsuitable.

HEP analysis is an indicator of the function and value of wetlands lost. Another important impact indicator is the total number of acres of wetlands lost as a result of the Narrows Project. Based on this criterion, all impacts on wetlands would be important because of the loss of acreage and function prior to implementing mitigation measures.

3.6.3 Predicted Effects

3.6.3.1 No Action Alternative

Wetland conditions are expected to remain the same as baseline conditions if the project were not constructed and if there were no future developments.

How can the surveys continue to be so inadequate? We have gone from 100 acres to 71 acres to 89 acres. Which one is it?

What will be the reasoning or logic that we use to choose the number of acres that will be mitigated?

3.6.3.2 Proposed Action Alternative

The proposed Narrows Reservoir would inundate 89 acres of wetlands.

Hydrologic and hydraulic studies were conducted to determine the potential impacts to the riparian and wetlands vegetation of Gooseberry Creek resulting from decreased flows. Flow measurements conducted by the Utah Division of Water Rights indicate that the stream is a "gaining stream." This means that the streamflow increases as it moves downstream because the stream is being fed by the adjacent ground water aquifer. Because the stream is serving as a drain for the ground water system, an increase or decrease in stream water level would result in a corresponding increase or decrease in the elevation of the ground water table adjacent to the stream.

Water surface profile studies were conducted to determine the depth of flow in Gooseberry Creek between the Narrows damsite and Lower Gooseberry Reservoir. The studies indicated that, with the reduced flows proposed by the Proposed Action and with the existing stream cross section, the depth of flow would decrease by 6 to 11 inches under worst-case conditions. However, the project plan includes proposed modifications to this portion of the Gooseberry Creek channel. These modifications include narrowing the channel to maintain the depth of flow. In designing the stream channel modifications, the intent would be to create a stream channel that is more naturally suited to the new flow regime and that will have the same depth of flow as under baseline conditions. Therefore, the depth of ground water adjacent to the stream would not decrease, nor would there be any adverse effects on riparian and wetland vegetation adjacent to the stream. If anything, it is entirely possible that the wetland communities would be enlarged as a result of the project impacts; the current outer bounds of those communities likely would be

unchanged as a result of the shallow ground water flowing toward the stream, but the wetlands likely would be increased precisely to the degree that the stream channel itself (or at least, the open water surface of the stream) narrows.

The process of narrowing the stream, as described in the SDEIS is planned so that the configuration of the narrowed streambanks would conform to that of the original streambank with respect to slope, materials, material size, and frequency as well as the water depth. The only change would be in the width of the channel and available open water surface. The result is that the same opportunity for overbank flows and wetted perimeter would exist as in the natural configuration. The gaining nature of the stream in this reach means that ground water is flowing toward and into the stream channel and that the stream does not provide the primary supply for the riparian community. The "wetted perimeter," therefore, should continue to be supplied from this source; and the stream will continue to gain as it flows. Bank saturation will not be affected here, as it would on many streams, because the direction of the ground water flows into the stream, rather than away from it. While overbank flows may be reduced in frequency, such flows, for this same reason, also are not critical to the bank saturation that supports the riparian community.

About 160 square feet (0.004 acre) of wetlands adjacent to Cottonwood Creek would be impacted by constructing the discharge structure at the end of the Upper Cottonwood Creek Pipeline. The remainder of the stream channel would not be affected. The channel presently is stable and adequately protected by natural cobble armoring.

Author: michaelidavis Subject: Study Note Date: 5/28/2010 11:34:00 AM

PJ - I do not agree. Seems that the BOR action will lead to the loss of wetlands. The BOR action will result in the change in the stream morphology that is presented as an attempt to keep from losing the wetlands completely.

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5-61

Author: [redacted] Subject: [redacted] Case: [redacted]
FY: [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

3.6.3.3 Mid-Sized Reservoir Alternative

Impacts to wetlands resulting from implementing the Mid-Sized Reservoir Alternative would be similar to those resulting from construction of the Proposed Action. The primary difference would be the smaller amount of acreage (81 acres of wetlands) that would be inundated by Narrows Reservoir.

3.6.3.4 Small Reservoir Alternative

Impacts to wetlands resulting from implementing the Small Reservoir Alternative would be similar to those resulting from constructing the Proposed Action. The primary difference would be the smaller amount of acreage (72 acres of wetlands) that would be inundated by Narrows Reservoir.

3.6.4 Mitigation

Wetland mitigation measures are included in the project alternatives to mitigate for impacts to wetlands. The wetland mitigation measures would provide similar wildlife habitat values lost due to the inundation of the reservoir.

3.6.4.1 Proposed Mitigation - Mud Creek Area

The proposed mitigation would restore and create wetlands adjacent to Mud Creek near Scofield. This measure would entail purchasing about 220 acres of private land adjacent to Mud Creek, south of Scofield Reservoir. Portions of this land contain wetlands that have been severely damaged by past livestock grazing practices. The remaining portions are upland. It is anticipated that, by removing livestock, the wetland vegetation would return on its own with little or no other outside measures. Stream channel improvements on the Mud Creek channel would create additional

wetlands adjacent to the stream. Some earthwork would be needed to create small berms and swales, which would create cells of new wetlands. These wetlands would be fed by the discharge from existing springs in the area (additional details found in section 2.2.2.2.4). Flows from Mud Creek also could be used to supply water for these wetlands. All or a portion of the required wetland mitigation could be performed at this site. The wetland area would be maintained by SWCD under a MOA with UDWR.

3.6.4.2 Alternative Mitigation - Area West of Lower Gooseberry Reservoir

Water would be diverted from an existing diversion structure in Cabin Hollow and would be transported through an existing open ditch to the 120-acre mitigation site. The water would be diverted from the ditch at several locations and allowed to flow across the uplands and to the surrounding wetlands. The existing wetlands on this site appear to have been created and maintained by the existing irrigation system. Some earthwork would be needed to create small berms and swales, creating cells of wetlands. The area around the perimeter would be excavated somewhat deeper and to a 20-foot minimum width, wider in some areas so that the edge of the swale is not abrupt but serpentine. This deeper area would allow for willows and other shrubs to be planted to create a vegetation barrier to the interior wetlands. The area would still be available for grazing, and wildlife would use the area; however, sheep would be deterred from entering the wetland by the perimeter swale, unless forced to cross the deeper water. The above perimeter swale would eliminate the need to fence the area and would allow access for wildlife. At least a portion of the required wetland mitigation could be accomplished at this site.

Not on FS lands - this will not benefit the Forest Service System Lands. It will instead benefit the state of Utah.

Comments 62, 63, and part of 64 begin here due to lack of space on page 3-81.

The third sentence suggests that an MOA will be developed only if historic properties will be adversely affected by the project. Yet many of the proposed protocols to be included in such an MOA include the types of things one would do to identify those historic properties in the first place (such as survey protocols). Are you proposing to do an MOA to cover all actions on the project relating to cultural resources, to be signed at the beginning of the whole Section 106 process, or just an MOA if historic properties are going to be adversely affected?

Would you want to include Native American Tribes as potential signatories on the MOA?

The document assumes that the 1979 survey of the main reservoir impoundment area conducted by Dames and Moore meets current site identifications standards. Their report states that the survey was conducted in 15 m intervals, which is less than the 10 m intervals suggested by the Utah State Historic Preservation Office for complete survey coverage.

Most of all, they are unclear on specifically what criteria they used to identify a "site." They state that, "The latter [a site] refers to an identifiable locus of historic or prehistoric human activity within a reasonably bounded area" (Singer 1979:5). They found several areas with relative concentrations of flakes (see Figure 2 in Singer 1979:7). It is possible that if these areas were revisited, they might meet more recent standards for site identification and actually be documented as archaeological sites.

Predicted Effects

additional pipelines to deliver water to existing water distribution systems. Finally, impacts from the proposed rehabilitation of an existing tunnel to Cottonwood Creek, the development of recreation facilities, staging areas, access roads, borrow areas, and any other ancillary facilities linked to the proposed Narrows Project would be included in the APE.

Reclamation will complete cultural resource compliance, as stated in Appendix F, "Environmental Commitments," of the SDEIS, as a means to fulfill Section 106 of the NHPA. These commitments state that any areas associated with the construction of the proposed project will be subject to Class I and Class III cultural resource inventories to identify and evaluate all cultural resources. If historic properties are located within the APE, and if they will be adversely affected by construction activities associated with the proposed project, an MOA will be developed. The MOA would be among Reclamation; the Utah State Historic Preservation Office; the USDA Forest Service; the Advisory Council on Historic Preservation (ACHP), if it chooses to participate; and SWCD. The MOA would outline cultural survey protocols, report and treatment plan requirements, and procedures for mitigation on potential impacts to identified and unidentified (inadvertent discovery situations) historic properties. The MOA also would include, among other stipulations, a Native American consultation summarization and would identify the cultural resource APE for the proposed project.

umerous cultural resource inventories previously have been conducted within the proposed project area. Under a contract with

The 1979 Class III inventory identified two prehistoric archaeological sites near the proposed dam and reservoir area. The sites were open lithic scatters with few formal tools. No further evidence of cultural materials was present on these sites. From the limited data available, the proposed project area appears to support the idea that high altitude areas were utilized as temporary, seasonal hunting grounds during the Archaic period, about 2,000 to 4,000 years before present. In addition, a total of 26 isolated artifacts were recorded during the cultural resource inventory.

Also, one historic cultural resource site, a stone structure foundation, was located during the 1979 inventory. The three cultural resource sites were not evaluated for their NRHP eligibility in 1979. As a result, the sites will be revisited and evaluated for eligibility as stated in the environmental commitments for cultural resources.

The design and, therefore, the APE of the proposed project have changed since the 1979 cultural resource inventory. Class I and Class III cultural resource inventories have not been performed for the Upper Cottonwood Creek, Oak Creek, or East Bench Pipeline alignments; new road alignments; borrow areas; staging areas; new campgrounds; marinas; wetland mitigation areas; or haul roads. Class I and Class III inventories covering the entire APE of the proposed project will be conducted prior to initiation of final design and construction in accordance with 36 CFR Part 800.

3.9.2 Methodology

The methods used to identify, assess the

5-62

5-63

5-64

5-65

Author: michaeljavis Subject: Sticky Note Date: 5/28/2010 12:09:36 PM
Charmaine Thompson
Page 3-61

Second paragraph (comments)

The third sentence suggests that an MOA will be developed only if historic properties will be adversely affected by the project. Yet many of the proposed protocols to be included in such an MOA include the types of things one would do to identify those historic properties in the first place (such as survey protocols). Are you proposing to do an MOA to cover all actions on the project relating to cultural resources, to be signed at the beginning of the whole Section 106 process, or just an MOA if historic properties are going to be adversely affected?

Would you want to include Native American Tribes as potential signatories on the MOA?

In the last sentence, there is reference to including a "Native American consultation summarization" in the MOA. Does this mean a summary of consultation conducted with Tribes, or a summary of the types of information that would be included in tribal consultation? I ask this in part because there is no other reference to tribal consultation in the cultural resource sections. This consultation will have to be done in order to meet the requirements of Section 106 of the National Historic Preservation Act, and will be expected by the Utah State Historic Preservation Office. Perhaps it would be useful to include an explicit reference in this discussion to the fact that Tribal Consultation will be completed as part of compliance with Section 106 of NHPA.

Author: michaeljavis Subject: Sticky Note Date: 5/28/2010 12:09:47 PM
Charmaine Thompson

Third paragraph (comment)

The document assumes that the 1979 survey of the main reservoir impoundment area conducted by Dames and Moore meets current site identification standards. Their report states that the survey was conducted in 15 m intervals, which is less than the 10 m intervals suggested by the Utah State Historic Preservation Office for complete survey coverage. Most of all, they are unclear on specifically what criteria they used to identify a "site." They state that, "The latter [a site] refers to an identifiable locus of historic or prehistoric human activity within a reasonably bounded area" (Singer 1979:5). They found several areas with relative concentrations of flakes (see Figure 2 in Singer 1979:7). It is possible that if these areas were revisited, they might meet more recent standards for site identification and actually be documented as archaeological sites.

As a result, we would recommend that selected areas of the previously surveyed impound area be re-surveyed for cultural resources in order to meet today's site identification standards. These could be limited to areas above 42SP97 and the high terrace areas shown in Figure 2 (Singer 1979:7) in which denser areas of isolated artifacts were found.

We also make this recommendation based on the fact that at least two possible Paleo-Indian tools were found during the 1979 survey; one tool at both 42SP95 and 42SP97 (see Singer 1979:12-13). The Wasatch Plateau is known to contain buried archaeological deposits that date to this very early and archaeologically important time period (c. 10,000-8,000 years ago). Specifically, the Huntington Mammoth (which was scavenged by Paleo-Indian hunters) was recovered intact in a buried context at a similar elevation about 5 miles to the south. As a result, even small sites which might have been missed during the initial survey may be archaeologically important because they may contain additional Paleo-Indian materials (or important materials from later time periods).

As a result, we would recommend that selected areas of the previously surveyed impound area be resurveyed for cultural resources in order to meet today's site identification standards. These could be limited to areas above 42SP97 and the high terrace areas shown in Figure 2 (Singer 1979:7) in which denser areas of isolated artifacts were found.

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5-66

J.P. McCalpin of GEO-HAZ Consulting, Inc., Estes Park, Colorado, and S.P. Nishenko, research associate at the University of Colorado Natural Hazards Research Center in Boulder conducted the research. "This is dramatic new information," says Dr. Les Youd, Chairman of the Utah Seismic Safety Commission. "We don't wish to appear to be alarmists, but this study suggests that we are at greater risk than previously thought. We feel so strongly about this information we thought it best to have one of the authors present the results of the study directly to the commission." S.P. Nishenko addressed the Utah Seismic Safety Commission during its regular meeting on January 16, 1996.

53. Fishbein addressed the Utah Science Salina Commission during its regular meeting on January 13, 1970.

A major earthquake striking the Wasatch Front is not a question of if, but when. A new study suggests that one may be more likely than previously thought. The study, soon to be published in the February edition of the Journal of Geophysical Research, estimates a 30 percent probability of a magnitude 7 or larger earthquake in the Wasatch Front region in 100 years. Using an alternative calculation considering new fault trenching results by the Utah Geological Survey, the study estimates a probability of such an earthquake on the Wasatch fault in Salt Lake City alone may be as high as 57 percent in 100 years.

3-202



Appendix F

Narrows Project Supplemental Draft Environmental Impact Statement Environmental Commitments

The following list summarizes major environmental commitments for the Narrows Project, Utah. These commitments would be included in construction contracts and other agreements to ensure their implementation. Mitigation measures would be concurrent with project construction. If environmental commitments are not kept, project funding would be withheld by the Bureau of Reclamation. Additionally, the 404 Permit issued by the U.S. Army Corps of Engineers (USACE) could restrict filling of the reservoir if environmental commitments are not met.

1. Prior to initiation of final design and construction, detailed cultural resource surveys would be performed along the proposed alignments of the Upper Cottonwood Creek, Oak Creek, and East Bench Pipelines. If cultural resource sites are found, the pipelines would be re-routed where possible to avoid the impact. If the pipeline cannot be re-routed, appropriate mitigation would be developed through coordination with the State Historic Preservation Office.
2. Contractors would be required to cease work immediately if they should discover prehistoric, historical, or archeological evidence during construction. Work would not be resumed until such evidence is properly evaluated by qualified cultural resources specialists.
3. Evaluate three previously recorded sites in pool area as to the *National Register of Historic Places* (NRHP) eligibility. Limited testing necessary to evaluate the sites will be accomplished through placing auger holes in a pattern on each site or excavating test units.
4. Inventory any of the pool area, dam construction zone, and road realignments not inventoried in 1976, including ¼-mile zone around pool area that would be impacted by recreational use of the reservoir. Inventory the location of all recreational facilities proposed in the project plan, in addition to all areas slated for wetlands enhancement.
5. Inventory and evaluate the existing tunnel delivery system on Gooseberry Creek as to its NRHP eligibility.
6. Conduct a paleontological literature search and survey of the project area and its immediate vicinity with the particular view of assessing the likelihood of recovering Pleistocene fauna during the project.

F-1

Page: F-1

Author: richw@bwr Subject: Draft Note Date: 5/28/2013 12:52:19 PM
Summary: Narrows

General comment: do you want to explicitly add a statement similar to, "Conduct consultation on project effects with interested Native American Tribes, as part of Section 106 of NHPA Consultation" to the list of commitments? It might help clearly document that you will be doing this aspect of Section 106 compliance. This might be helpful both to Tribes and any others who read the EIS who have an interest in making sure this aspect of Section 106 compliance is completed.

Author: richw@bwr Subject: Draft Note Date: 5/28/2013 12:53:39 PM

Again, we would recommend adding a statement to the effect of "[inventory any of the] high site potential areas within the area previously surveyed in 1979, to make sure that the entire project cultural resource inventory meets current site identification standards."

Author: richw@bwr Subject: Draft Note Date: 5/28/2013 12:54:37 PM

Christine Thompson

FYI...as you probably know, the Narrows Tunnel was constructed in 1968. As such, it is not old enough (and not historically important enough) to be considered for inclusion on the National Register of Historic Places until 2018.

General comment: do you want to explicitly add a statement similar to, "Conduct consultation on project effects with interested Native American Tribes, as part of Section 106 of NHPA Consultation" to the list of commitments? It might help clearly document that you will be doing this aspect of Section 106 compliance. This might be helpful both to Tribes and any others who read the EIS who have an interest in making sure this aspect of Section 106 compliance is completed. Again, we would recommend adding a statement to the effect of "[inventory any of the] high site potential areas within the area previously surveyed in 1979, to make sure that the entire project cultural resource inventory meets current site identification standards." FYI....as you probably know, the Narrows Tunnel was constructed in 1968. As such, it is not old enough (and not historically important enough) to be considered for inclusion on the National Register of Historic Places until 2018.

Comments specific to the FEIS:

Overall:

Most of the comments submitted to the BOR from the Forest Service regarding the last FEIS review (letter dated September 21, 2001) remain the same. In other words, the BOR has not addressed issues and concerns regarding mitigation and downstream effects of the reservoir.

To quote that letter: "There has been continuing concern regarding appropriate off-site mitigation, the need for on-Forest mitigation for on-Forest effects,....We now feel the best procedure would be to have a mitigation fund established that could be used cooperatively by both the Forest Service and Division of Wildlife Resources over a period of time, to identify and fund mitigation if the Narrows Project is undertaken. This would allow us the flexibility to ensure that necessary mitigation measures are implemented and coordinated with our ongoing programs of work." This concern continues to be valid for the Narrows Project Supplemental Draft Environmental Impact Statement June 2009.

Chapter 2

The Alternatives Considered including the Proposed Action

- 5-70 None of the action alternatives have explored different operational or release strategies to mitigate downstream effects on fisheries, riparian areas and wetlands. It appears that 'fill and spill' reservoir management would be applied to all alternatives. For this reason, the different size reservoirs analyzed in the action alternatives do not result in differences for key resources such as fisheries, riparian area and wetlands located on Forest Service Lands. An alternative should be developed including a reservoir release scenario that mimics the natural flow regime.

Utah Rivers Council submitted an alternative proposal for the Narrows Project. This Alternative should also be included in the analysis.

- 5-71 The FEIS proposes mitigating effects on fisheries, riparian areas, and wetlands primarily on adjacent private lands. While these proposals (e.g., below Scofield reservoir - 640 acres, south of Scofield town - 220 acres, easement around the narrows reservoir - 150 acres, etc) may have merit, they remain unacceptable to the Forest Service. Effects on National Forest System lands must be mitigated within the National Forest boundary, and preferably on National Forest System lands. If any mitigation is to be satisfied by the purchase of private land, especially for wildlife habitat loss and terrestrial habitat, a higher priority should be to purchase private land around the Narrows Reservoir and downstream on Gooseberry Creek (i.e., Kristine Lee property). This would more closely

fulfill the desires for "in place - in kind" replacement. Title to all lands purchased must be in the name of the United States.

- 5-72 It is expected that spawning habitat will be significantly impacted in several streams (Middle Gooseberry-cutthroat trout, Lower Gooseberry-rainbow trout, Fish Creek-rainbow trout, Cottonwood Creek-cutthroat trout). A mitigation account/collection agreement must be established and funded prior to site development for stream channel and streamside riparian restoration and improvement. Specific projects would be designed based on monitoring of effects following construction and filling of the reservoir.
- 5-73 A fish screen would need to be installed in the Narrows Reservoir outlet entering the diversion to Cottonwood Canyon. Without this mitigation measure fish may be lost from Narrows Reservoir.

Fishery Measures.

- 5-74 *Restore Streamflow in Gooseberry Creek Tributaries* - The measure does not affect National Forest System lands and does not adequately mitigate effects anticipated on National Forest System lands. In addition, these drainages are very different from Gooseberry (at the proposed dam site and below) and do not provide equivalent habitat benefits.
- 5-75 *Provide Minimum Flows below Narrows Dam* - The 1.0 cfs release combined with natural accretion of flow may approximate baseflow. However it does not mitigate for the loss of the range of flows presently occurring in the stream system.
- 5-76 *Stabilize Stream Banks Along Middle Gooseberry Creek* - We agree that the dewatered stream channel will narrow naturally. We propose the establishment of a mitigation account for localized stream stabilization and habitat improvement on an as-needed basis. Since the majority of the affected area is National Forest System lands, the Forest Service must have an approval role for any contracted design and construction and should have the option of doing design and project implementation in-house using the mitigation account. Examples of additional mitigation include:
- Fish Creek from Forest boundary to Gooseberry Creek – improve stream habitat with placement of boulder, log deflectors, spurs and cover structures (2.9 miles) and mitigate expected temperature increases by planting of narrow-leaf cottonwood (*Populus angustifolia*) and Engelmann spruce (*Picea engelmannii*) seedlings along the stream banks in natural appearing clusters (56.3 acres).
- Gooseberry Creek from Fish Creek to Mill Creek – improve stream habitat with placement of boulder, log deflectors, spurs and cover structures (2 miles) and

mitigate expected temperature increases by planting of narrow-leaf cottonwood (*Populus angustifolia*) and Engelmann spruce (*Picea engelmannii*) seedlings along the stream banks in natural appearing clusters (16.3 acres).

Gooseberry Creek at Mammoth Dam site – reduce sediment loads from bare and unstable slopes by planting with an appropriate native seed mix and stabilizing with erosion control matting (6 acres).

Pontown Creek from the Forest boundary up to the old coal prospect – reduce sediment loads by closing and rehabilitating unneeded roads (0.65 miles), improving the main roads (4.4 miles) up Bear Ridge and Fish Creek Ridge, restabilizing the coal prospect (2 acres), and repairing the fence (1 mile) along the Forest boundary to reduce cattle trespass problems, leading to better bank stability.

- 5-77 *Provide Flushing Flow and Other Releases to Gooseberry Creek* - While the 300 acre feet proposed in this document might usefully mitigate oxygen depletions during critical winter periods, it is inadequate as a flushing flow.. Current research is clear that a range of flows that exceeds the average annual event ($Q_{1.5}$) is necessary for long-term maintenance of aquatic habitat. Duration of these flows must be comparable to naturally occurring durations. This has been summarized in *Attributes of an alluvial river and their relation to water policy and management* by Trush, McBain and Leopold (PNAS, 2000 available at www.pnas.org/cgi/reprint/97/22/11858.pdf). Based on an analysis of stream gage records, flows into the upper portion of Lower Gooseberry should periodically exceed 170 cfs for a period of eight to ten days; this is approximately 3300 acre-feet. Occasionally, there should also be flows comparable to the Q_5 and Q_{10} events.

The 300 acre-feet currently proposed as a short-duration flushing flow is inadequate for long-term habitat maintenance. Therefore, this measure is misleading in that it appears to provide the necessary stream functions associated with higher ranges of flow.

- 5-78 *Acquire and/or Improve Stream Segments* - Three miles of stream improvement on National Forest System lands does not adequately mitigate for eight miles of stream to be affected. Mileage equal to that affected must be restored or enhanced on adjacent National Forest System lands. Funding of a mitigation account to be used for projects identified by the Forest Service and UDWR over a period of five to ten years following site development would ensure adequate mitigation. This approach allows mitigation projects to be developed from priority areas that change or evolve over time and also allows monitoring of effects from the Narrows Dam and a chance to identify new or unexpected problems in site-specific areas that have feasible solutions.

- 5-79 *Provide Winter Releases to Cottonwood Creek and Provide Summer Flows in Lower Cottonwood Creek* - These measures do not occur on National Forest System lands and

would not adequately mitigate the effects of dewatering on National Forest System Lands.

Construct Upper Cottonwood Creek Pipeline - This seems to be a necessary part of the project and has little benefit for fisheries. It should not be listed under Fisheries Mitigation Measures.

- 5-80 *Provide a Minimum 144-acre Conservation Pool* - The conservation pool must be expressed in terms of acre feet only; surface acreage will change as the topography of the lake bottom changes. In addition, this document or subsequent agreements must include a provision that no assessments, fees, or other duties will be assessed against the conservation pool or the conservators/administrators of the conservation pool.

5-81 Wetland Measures

There is a concern on the part of the Forest Service regarding the effects of flow depletion and the reduction in the higher ranges of flows on the riparian/wetland complexes that occupy the lower portions of the Gooseberry and Fish Creek valleys.

It is the Forest's policy that adverse effects on National Forest System lands not within the BOR withdrawal should be mitigated on National Forest System lands. This is based on Forest Plan requirements that adverse effects on fisheries and riparian areas or wetlands be mitigated, on the Corps of Engineers' in-kind in-place policies, and on our determination that the appropriate watershed scale for the effects of concern is the Gooseberry/Fish Creek watershed upstream of Scofield Reservoir. The measures proposed in this section do not occur on National Forest System lands and would not adequately mitigate the effects anticipated on National Forest System lands in the area of inundation and down-valley. These measures are unacceptable to the Forest Service. We proposed the funding on a mitigation account similar to that described above. The two funds could be combined to allow for more comprehensive riparian/wetland/aquatic habitat projects.

In addition, creating a wetland area west of Lower Gooseberry Reservoir (p 2-30) would not create an equivalent wetland to what is lost either with inundation at the reservoir site or downstream on FS lands. That site is an upland sagebrush bench with very small stringer wetlands. This site is neither similar to valley bottom willow vegetation community that would be lost with reservoir construction nor would it have the potential to develop a similar soil/water/vegetation community.

Chapter 3

Affected Environment and Environmental Consequences

- 5-82 **Page 3-1 through 3-10.** As a Cooperating Agency, we must ensure the Biological Assessment (Threatened, Endangered and Proposed Species), and Biological Evaluation

(R4 Sensitive Species) meet Forest Service agency requirements in order to make subsequent decisions associated with this project on National Forest System lands outside the BOR withdrawal. Otherwise, we will need to revisit the consultation process prior to authorizing activities outside the withdrawal area.

5-83 Water Resources Section

The analysis is completed using average monthly flows to determine changes under each alternative. This analysis leaves out important components of the flow or flood regime such as magnitude, frequency, duration, timing and rate of change. There is a growing body of literature (Poff et al. 1997; Stromberg 2001; Nilsson and Svedmark 2002; Whiting 2002) that the variation in flows including large flood events (20-year or greater peak flow) are critical to maintaining the integrity of the stream system. Therefore, this analysis does not adequately display potential changes to the stream system on Gooseberry and Fish Creek with the implementation of any of the action alternatives.

5-84 Fisheries Section

IFIM analysis should be completed and analyzed using current methods and the latest and best scientific literature concerning the effects of flow regulation on fishery habitat. It is unclear how old the analysis is that is used in the Narrows FEIS since no dates are provided. It could be ten years old and quite stale.

In the 'Flow Alternation Effects' for Middle and Lower Gooseberry Creek as well as Fish Creek, the document refers to changes in average monthly flows. Analysis of flow effects on fisheries should be based on low flows, usually the seven day low flow is used. Average monthly flows do not reflect critical flow levels for fish or fish habitat. For example, a flow of '0' can be hidden in an average monthly flow and fish prefer to be wet.

5-85 Wetland Resources Section

The analysis does not include an analysis of the possible changes to wetland areas associated with Fish Creek and lower Gooseberry due to the altered flow regime associated with operation of the proposed Narrows Reservoir.

The following excerpt is from a analysis and white paper on the effects of the proposed Narrows Project completed by Katherine Foster, former Manti – La Sal Forest Hydrologist (May 2004):

“natural flood regimes create a variety of microhabitats along and across a floodplain and provide a variety of recruitment opportunities (Stromberg 2001). The ‘frequency and magnitude of physical disturbance determine patterns of succession and rates of species turnover’ (Nilsson and Svedmark, 2002).

Variation in the types of disturbances is important in maintaining diverse riparian communities and to avoid favoring any single species...Large floods (the 20-year or greater peak flow) rejuvenate floodplain wetlands (Poff et al. 1997). Large floods may fire-proof a riparian area by removing debris and maintaining moist conditions in plants and soils (Stromberg 2001). Intermediate size floods (10 to 20 –year peak

flows) affect ecosystem components like plant community patches; minor floods (1.5 to 3.3 – year peak flows) affect individual species or plants (Nilsson 2002)...In constrained channels, such as portions of Lower Gooseberry, loss of high flows could result in increased cover by plants that would otherwise be removed by flood scour. In alluvial valleys, such as Fish Creek, loss of high flows could result in modified plant communities by causing plant desiccation, poor growth, poor seed dispersal, or poor seedling establishment (Poff et al. 1997).. the duration of high flows affects the balance between species tolerant of flooding and high water tables and those that are more intolerant, including upland species that may have become established in riparian areas during drier periods between floods. Decreasing the duration of high flows increases opportunities for early seral species to move into areas normally flooded and/or scoured while decreasing opportunities for those species needing inundation or higher water tables...In order to maintain the quality and diversity of the willow complex in Lower Gooseberry and Fish Creek over the long-term, sexual reproduction is essential. Although some regeneration occurs from root sprouting of existing clones...without sexual reproduction, willow populations would become more homogeneous and decadent and the quality of the habitat would degrade over time...based on willow studies from other rivers, an adequate flood recurrence interval for the creation of regenerative habitat for willow is on the order of 10-20 years (David Merritt, personal communication)."

The effects of an altered flow regime on downstream wetland resources needs to be completed and displayed by alternative.

6. U.S. GEOLOGICAL SURVEY, JAMES F. DEVINE, SENIOR ADVISOR OF SCIENCE APPLICATIONS



United States Department of the Interior

U. S. GEOLOGICAL SURVEY

Reston, VA 20192

In Reply Refer To:
Mail Stop 423

May 19, 2010

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606-7317

Subject: Review of the Supplemental Draft Environmental Impact Statement for the Narrows Project, Sanpete Co., Utah

Dear Mr. Crookston,

As requested by your correspondence of March 29, 2010, the U.S. Geological Survey (USGS) has reviewed the subject draft environmental impact statement (EIS) and offers the following comment.

6-1 COMMENT

I was unable to find where the following reference is used in the SEIS, and I was unable to verify the existence of this publication on the Utah Water Science Center publications page or the USGS publications page. Suggest that if it is not referenced in the text it should be removed from the reference list.

Stephens, D. Not dated. *Why Scofield Reservoir Is Eutrophic, Effects of Nonpoint Source Pollutants on a Water Supply Reservoir in Utah*. U.S. Geological Survey. Salt Lake City, Utah.

Thank you for the opportunity to review and comment on the DEIS. If you have any questions concerning our comment, please contact Gary LeCain, USGS Coordinator for Environmental Document Reviews, at (303) 236-5050 (x229) or at gdlecairn@usgs.gov

Sincerely,

/Signed/

James F. Devine
Senior Advisor for Science Applications

7. U.S. HOUSE OF REPRESENTATIVES, REPRESENTATIVE JASON CHAFFETZ,
UTAH, 3RD DISTRICT

AL



May 26, 2010

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606-7317

Re: Narrows Project

Dear Mr. Crookston,

- 7-1 I am writing to comment on the recently-released Supplemental Draft Environmental Impact Statement for the Narrows Project (Narrows) in Sanpete County. I strongly urge the Bureau of Reclamation to come to a favorable Record of Decision for the Narrows as soon as possible.

Water is a scarce commodity in the western United States. As the second driest state in the country, this is especially true for Utah. Central Utah has been a prime beneficiary of the Bureau's water development resources.

Neighboring Scofield Dam was created by a Bureau project in 1925. The Bureau then oversaw construction projects at Scofield in 1943, 1997, and 2007. Despite these successful efforts, a 2006 study by Fransen Noble Engineering found that roughly 9,733 acre-feet of water continues to flow from Gooseberry and Fish Creeks, through Scofield Reservoir, and on to the Colorado River.

Agreements were reached during the 1930's between water-weary Carbon and Sanpete Counties to increase water for the area and to capture this lost water. Carbon County has already received the water they were promised from the deal and Sanpete is closer than ever to receiving theirs.

The Narrows project will allow Sanpete County to access their legally-guaranteed 5,400 acre-feet of water, prevent regional water loss, and continue the successful local/federal partnership in central Utah.

The original agreement between Carbon and Sanpete Counties allocated 30,000 acre-feet to Carbon and 17,000 acre-feet to Sanpete. In an effort to resolve the conflict, Sanpete reduced their water right from 17,000 acre-feet down to 5,400 acre-feet. Despite this sacrifice, opponents still insist the Narrows will create a regional water shortage. I disagree with this assertion. The Narrows will capture roughly 4,234 out of the 9,733 acre-feet of water that is currently lost. This means in non-drought years 5,499 acre-feet of water will continue to be lost to the Colorado

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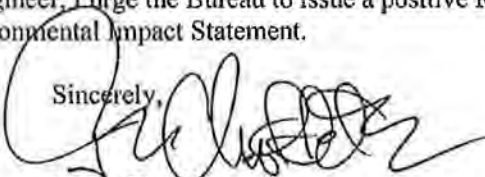
River. Thus, the region will have access to this 5,499 acre-feet. The claim that the Narrows will create a water shortage is overstated.

The three Bureau projects at the Scofield Dam have been funded under a federal-local cost share agreement. Under these agreements, 85% of the work has been covered by federal taxpayers and 15% by the water users. As noted above, Sanpete County is seeking assistance for the Narrows through the Bureau's Small Reclamation Projects Act loan program. The US taxpayer will be repaid under this arrangement.

The Colorado River Basin Salinity Control Program has invested nearly \$20 million in the Price/San Rafael Rivers region (Emery, Carbon, Wayne, and Garfield Counties). As a result, approximately 36,050 acre-feet of water rights in the region have been enhanced. Alfalfa production in the area is enjoying a rising trend. Recent surveys show 95% of people in the Price/San Rafael Rivers region believe the salinity control program has had a positive impact on local economies. This is yet another example of successful local/federal partnership in the region. It would be hypocritical for beneficiaries of the Salinity Program to criticize federal investment in the Narrows project.

The Bureau of Reclamation's mission is to assist western communities in their struggle with the arid West. Sanpete County was promised this water storage project over 80 years ago. Federal investment in the area has proven successful. And in the case of the Narrows, the initial federal investment will be paid back. With support from the Utah House of Representatives, Utah State Senate and the State [Water] Engineer, I urge the Bureau to issue a positive Record of Decision on the Supplemental Draft Environmental Impact Statement.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jason Chaffetz', written over a large, stylized circular flourish.

Jason Chaffetz
Member of Congress

8. U.S. HOUSE OF REPRESENTATIVES, REPRESENTATIVE JIM MATHESON,
UTAH, 2ND DISTRICT

JIM MATHESON
2ND DISTRICT, UTAH
<http://matheson.house.gov>

Congress of the United States
House of Representatives
Washington, DC 20515-4402

ENERGY AND COMMERCE
COMMITTEE
SUBCOMMITTEES:
HEALTH
ENERGY AND AIR QUALITY
COMMERCE, TRADE AND
CONSUMER PROTECTION
SCIENCE AND TECHNOLOGY
COMMITTEE

June 4, 2010

Bureau of Reclamation
Peter Crookston, PRO-774
302 East 1860 South,
Provo, Utah 84606-7317

Dear Mr. Crookston,

I am writing to provide comments to the Supplemental Draft Environmental Impact Study (SDEIS) for the Gooseberry Narrows Project located in Utah that was published in the Federal Register on March 29, 2010.

I have reviewed the SDEIS and unfortunately, I believe it is insufficient in regards to its analysis regarding cost, the alternatives and savings to the taxpayers, effect to neighboring Carbon County, and the implications on the Gooseberry Narrows - one of Utah's premier trout fishing streams in Utah.

8-1 The SDEIS notes that this project would be funded using the Small Reclamation Projects Act (SRPA). The Small Reclamation Projects Act was established to encourage State and local participation in the development of projects under Federal reclamation laws. According to the SDEIS, SanPete Water Conservancy District would apply for a SRPA loan for construction of the dam and reservoir for this project. However, I have great concern over use of SRPA. The last time Congress appropriated money for SRPA was in 2002. It is my understanding that this loan is no longer utilized due to our severe budgetary constraints. In fact, there were several proposals in the 106th, 107th, and 108th Congress to re-establish the loan program and none were enacted.

8-2 The cost estimates of this project were between \$41 million for the proposed action to \$37 million for a small reservoir dam according to the SDEIS. A study completed by CH2M Hill in August of 2008 projected the cost to be \$60-80 million dollars. The Environmental Impact Study (EIS) that was completed, but later rescinded in 1998 listed the cost of the dam and reservoir to be about \$17 million. The SRPA loan has a maximum of \$50 million dollars. Given the large cost discrepancy, I am hopeful that this cost issue will be resolved before the EIS is finalized.

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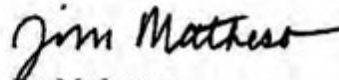
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FAX: (435) 627-1473

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- 8-3 Additionally, the SDEIS fails to note recognition of savings, both financial and water value, through conservation. The cost is estimated at \$40.3 million dollars but does not list the cost savings by rehabilitating tunnels and what that impact might be to constituent tax payers.
- 8-4 Gooseberry Narrows is long recognized as one of Utah's premier Blue Ribbon Trout Fishing stream systems. The impact of depleted flow rates would have a negative affect on tourism for both Carbon and Sanpete communities. I believe that this potential impact to both the industry and neighboring businesses needs to be more thoroughly analyzed in the SDEIS.

I understand that there are many stakeholders who are engaged in this process. It is my hope that my comments, along with others, will be taken into consideration when finalizing the EIS for this project. If you have any questions, please feel free to contact Kristen Lingley of my staff at 202-225-3011

Sincerely,

A handwritten signature in black ink that reads "Jim Matheson". The signature is fluid and cursive, with the first name "Jim" and last name "Matheson" clearly distinguishable.

Jim Matheson
MEMBER OF CONGRESS

STATE AGENCIES

- 9. Utah Department of Transportation, Monet Aldridge, P.E., Region 4, Preconstruction Engineer**
- 10. Utah Division of Water Quality, John Harja, Director, Public Lands Coordination Office**
- 11. Utah Farm Bureau Federation, Leland J. Hogan, President**
- 12. Utah General State Senate, 2009, Resolution, Ralph Okerlund, Sponsor**
- 13. Utah State House of Representatives, Representative Bradley Daw, District 60**
- 14. Utah State House of Representatives, Representative Kay L. McIff, District 70**
- 15. Utah State House of Representatives, Representative Michael Morley, District 66**
- 16. Utah State House of Representatives, Representative Bill Wright, District 68**
- 17. Utah State Engineers Office, David Marble, P.E., Assistant Utah State Engineer – Dam Safety**
- 18. Utah State Senate, Senator John L. Valentine, District 14**
- 19. Utah State Senate, Ralph Okerlund, District 24**
- 20. Utah State University Agriculture Extension, Matthew Palmer, Utah State Agriculture Extension Agent, Sanpete County**

9. UTAH DEPARTMENT OF TRANSPORTATION, MONET ALDRIDGE, P.E.,
REGION 4, PRECONSTRUCTION ENGINEER

Crookston, Peter L

ORIGINAL

From: Monte Aldridge [maldridge@utah.gov]
Sent: Tuesday, June 01, 2010 5:24 PM
To: PRO NarrowsEIS
Cc: Monte Aldridge; Nancy Jerome; Rebecka Stromness; Steve Ogden
Subject: UDOT Comments to Narrows Project EIS

The UDOT has the following comments to the subject EIS.

- 9-1 Section 2.2.2 Proposed Action Alternative states "relocation of 2.9 miles of State Road (SR) 264. The dam would be 120 feet high with a crest length of 550 feet and crest width of 30 feet." A 30' width at the crest of the dam would not allow sufficient width for reconstruction of SR-264. The UDOT minimum cross section would be 32' and this would require design exceptions and barrier.
- 9-2 Section 2.2.2.2.4 Upper Cottonwood Creek Pipeline states "A highway right-of-way 30 feet wide and 0.8 mile long would be required." This typically would not be sufficient ROW to construct a highway with two 12' travel lanes and 4' shoulders. Given the mountainous terrain the UDOT would seek a 200' ROW as a minimum.
- 9-3 2.2.2.2.8 Access to Features states "This highway would be adequate for hauling materials and equipment to the site." Consideration for the traveling public and load restrictions must be taken into account when utilizing state highways for "haul roads" to construction projects.
- 9-4 Table 2-5.-Narrows Project Cost Comparison of Storage Alternatives Evaluated in Detail 1 estimates the cost of relocating the highway to be \$3,292,000 for 2.9 miles of SR-264 reconstruction. This estimate may be substantially lower than the actual costs and a detailed estimate should be provided for review.
1. The UDOT must be an active participant in the design of any realignment of state highways.
- 9-5 2. Any easements or Rights of Way required for highway work associated with this project should be fully acquired with proper documentation for highway purposes and all costs borne by the Narrows project.
3. All required environmental clearances necessary to reconstruct SR-264 should be completed as part of the Narrows project action.
4. The UDOT should be a participating party to the document.

Monte Aldridge P.E.
Region 4 Preconstruction Engineer
Phone: 435-893-4738
Fax: 435-896-6458
Cell: 435-896-0726
E-mail: maldridge@utah.gov

PRO OFFICIAL FILE COPY
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JUN 11 '10

Reply Date	Initials	Cost
	JS	100
	JS	105
	JS	107
	KS	700
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Beneficial Uses, Standards (numeric and narrative), and the Antidegradation policies in UAC R317-2 comprise the Standards. The Supplemental Draft Environmental Statement (SDEIS) is deficient in addressing whether the Narrows Dam project will comply with the Standards of waters downstream of the proposed reservoir. These deficiencies must be addressed for DWQ to certify the project.

As stated in DWQ's 2001 comments on the previously released draft EIS to Mr. Kerry Schwartz, Bureau of Reclamation, DWQ's primary concern is the potential effect of the Narrows Project on Scofield Reservoir. A TMDL for the reservoir was approved by EPA in September 2000 of 4,842 kg/year total phosphorus that identified a load reduction of 1,881 kg/year from an annual average of 6,723 kg/year. Additional targets of Scofield Reservoir's TMDL include a shift in phytoplankton dominance away from blue-green algae, dissolved oxygen concentrations of no less than 4.0 mg/L in the upper 50% of the water column and a trophic state index value between 4050 (mesotrophic). The TMDL includes an implementation strategy with the primary recommendation being restoration of tributary streambanks to reduce sediment and nutrient loading and elimination of livestock grazing below the high water line of the reservoir.

- 10-3 The SDEIS proposes mitigation to maintain phosphorus at pre-Narrows Dam concentrations in Scofield Reservoir. The state requests that the SDEIS evaluate additional alternatives or mitigation to further reduce phosphorus loading to Scofield Reservoir as is required by the TMDL process. More details are necessary for DWQ to concur with the conclusions regarding potential changes to the trophic status of Scofield Reservoir should the Narrows project occur. Potential impacts to the aquatic food chain, such as macroinvertebrates, also require evaluation.
- 10-4

The state requests that the following comments be addressed by the project sponsors, as follows:

- 10-5 1) Further mitigation, beyond proposed pre-project levels, should be implemented in order to reduce the 1,881 kg/year or 28% of total phosphorous called for by U.S. EPA approved Scofield Reservoir TMDL.^{3,4} Since load reduction estimates in the Scofield TMDL were calculated almost 10 years ago and many improvement projects have been implemented since, a determination of total phosphorus loads based on current data and watershed modeling is needed.
- 10-6 2) Reduction in flow downstream of the proposed Narrows project will negatively impact aquatic life beneficial use designated for Gooseberry Creek, Gooseberry Reservoir and Blue Ribbon Fishery in Lower Fish Creek by reducing the extent of aquatic habitat and increasing stream water temperatures. These waters are Class 3A (R317-2-6.3), "Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain." The CWA expressly requires that states that have adopted water quality standards must take into consideration the use of waters for the "propagation of fish and wildlife."^{3A} The severity of these impacts to the cold-water fisheries and their necessary food chain must be explicitly addressed and understood to fully evaluate the environmental impacts of this project.⁵ More details are necessary for DWQ to concur with the conclusions regarding potential changes to the

- 10-7 trophic status of Scofield Reservoir should the Narrows Project occur. In addition, potential impacts to undesirable cyanobacteria should be explicitly evaluated in the SDEIS. At high concentrations, cyanobacteria have the potential to impair the beneficial use Classes 1C, 2B, and 4 (drinking water source, secondary contact recreation, and agricultural uses, respectively) in Scofield Reservoir.
- 10-8 3) The project sponsors should provide reasonable assurance that any mitigation actions will be monitored for effectiveness and maintained with enforcement to meet State Water Quality Standards into the foreseeable future.
- 10-9 4) The SDEIS should address the impacts of construction activity and document that they will be limited to sediment and turbidity and fish spawning will not be impaired (UAC R317-2-3.5.b.4).
- 10-10 The following permits, certification and review from the DWQ are required prior to the construction phase of the project:
- a. All activities regulated under Clean Water Act §404 must require a State Antidegradation Review. A Level II Antidegradation Review (UAC R317-2-3) will be required for the 401 Certification of the Narrows Dam project. The Narrows Dam will not qualify for the temporary and limited exemption in UAC R317-2-3.5.b.4.
 - b. A State Water Quality Certification of the project pursuant to § 401 of the Clean Water Act, 33 U.S.C. § 1341.
 - c. Construction activities that disturb one acre or more are required to obtain coverage under the Utah Pollutant Discharge Elimination System (UPDES) Storm Water General Permit for Construction Activities, Permit No. UTR300000. The permit requires the development of a storm water pollution prevention plan (SWPPP) to be implemented and updated from the commencement of any soil disturbing activities at the site until final stabilization of the project. A fact sheet describing the permit requirements and application procedures are located on our website <https://secure.utah.gov/stormwater/main.html>.
 - d. Dewatering activities, if necessary during the construction, may require coverage under the UPDES General Permit for Construction Dewatering, Permit No. UTG070000. The permit requires water quality monitoring every two weeks to ensure that the pumped water is meeting permit effluent limitations, unless the water is managed on the construction site.
 - e. A construction permit will be required if a permanent or temporary wastewater treatment facility is constructed on the site to collect and/or treat sewage effluent. A biosolids permit will be required if biosolids (sewage sludge) is treated on-site.

Division of Water Resources

10-11 The Narrows Project estimated evaporation depletion of 370 acre-feet per year appears to be high for a lake at 8,690 feet elevation. Utah Division of Water Resources has developed a method for determining reservoir depletion and evaporation of high altitude lakes. The results of the method are shown in Attachment A. The net depletion is calculated by multiplying the difference in evapotranspiration between native vegetation versus a water surface and subtracting the evapotranspiration that would have occurred in the area above the water surface and below the line stripped of vegetation. The method produced an estimate of a little more than 130 acre-feet of project evaporation depletion (see Attachment A). Since native vegetation depletes water pre-project, this could also reduce the estimated 90 acre-feet of depletions estimated for other project components such as new wetlands.

10-12 The estimates in Attachment A also indicate that since precipitation is greater than evaporation, the water impounded in the reservoir at this location will increase in volume since rainfall likely exceeds evaporation. Since the report indicated that there would be an additional 370 acre-feet of increased evaporation in the Price River Basin (pg S-11), the model used for this study likely applied an annual evaporation depletion to the reservoir because that assumption would be conservative. A month and year PRISM estimate of rainfall, temperature and wet-bulb temperature available through the University of Oregon could allow a more realistic estimate of evaporation and a better understanding of how Narrows Reservoir evaporation may affect downstream flows of the Price River.

As the reservoir will not be providing water to Sanpete County during periods of peak flow in the Sanpitch River, this allows the reservoir to potentially bypass sediment laden inflow waters. A sediment management plan to facilitate avoidance or removal for the reservoir is important for the sustainability of the project and is therefore highly recommended. Guidance for such a plan can be found in Water Resources' recent publication, "Managing Sediment in Utah's Reservoirs." This is available as a free download at www.water.utah.gov, or Water Resources can provide the project designers a hard copy.

10-13 Although Sanpete County is sponsoring the project, they will not be the only ones affected by increased flow in the Sanpitch River. Water in the Sevier River Basin is diverted and re-diverted throughout the Sevier River system. While salinity impacts of the project have been examined in detail for the Colorado River basin, this does not seem to be the case for the Sevier River basin, which will also be impacted by the salinity of Narrows Project return flows. The state request the SDEIS include analysis on how the Narrows Project is anticipated to impact Sevier River water quality and salinity. Although there is a comment in the report of how the Manti Meadows Alternative may help mitigate salinity impacts to the lower Sevier River Basin (S-20), the magnitude of this benefit and the resulting salinity decrease or increase to the Sevier River is not stated.

Division of Wildlife Resources

10-14 There have been several emerging wildlife issues in the ensuing decades since the first draft EIS was developed for this project. Several terrestrial and aquatic wildlife species, which previously did not warrant concern, are now under review for listing under the federal Endangered Species Act (ESA) in the project area. The Utah Division of Wildlife Resources personnel have not been contacted for several years about the Narrows project. It is surprising that a new scoping process was not utilized to ensure that all fish and wildlife concerns were adequately addressed in this SDEIS.

10-15 Several species of concern are found in the project area that were not included in the original DEIS or this SDEIS. One species, the northern leopard frog, was recently petitioned for listing under the Endangered Species Act and Wildlife Resources has historical records of leopard frogs in the project drainage. Another species, the greater sage-grouse was petitioned for protection under the ESA and was considered by the U.S. Fish and Wildlife Service (USFWS) to be "warranted but precluded" from listing status. The Gooseberry drainage and proposed reservoir site contains summer habitat for this species. Wildlife Resources has documented sage-grouse in this area for at least the past two years. The state requires the SDEIS analyze potential impacts from this project to sage-grouse and the northern leopard frog.

10-16 Aquatic species that may be impacted by this project have also been identified as Utah sensitive species since the original DEIS. There are two paragraphs in section 3.1.1.1 that acknowledge the existence of two species in the Price River below Farnham Diversion Dam that the State of Utah has entered into a conservation agreement for: the bluehead sucker and flannelmouth sucker. Impacts to these species are not included in the final 2000 biological opinion issued by the USFWS, and the impacts to these species are essentially overlooked in the SDEIS. Because these species are involved in a conservation agreement, the state considers the SDEIS an inadequate evaluation of the environmental consequences of this project and requires a revised biological opinion be conducted for this project. Wildlife Resources would also advocate for mitigation if impacts were revealed.

10-17 The 2000 biological opinion also directed the Upper Colorado River Endangered Fish Recovery Program to perform a study and make recommendations on flow regimes for the Price River. The SDEIS refers to the study but does not incorporate any of its findings in this SDEIS. Wildlife Resources recommends incorporating the findings of that study into the SDEIS.

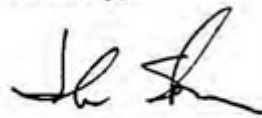
10-18 The SDEIS lists the water resources of three tributaries to Gooseberry Creek, Lower Gooseberry Reservoir, the stream segments from the project to Scofield Reservoir, Scofield Reservoir, Lower Fish Creek, the Price River and several streams in the San Pitch Valley, as being affected by this project in Section 3.3.1. In section 3.4.1 the SDEIS precludes listing Lower Fish Creek and the Price River fisheries as affected by this project without substantiation. The state considers Lower Fish Creek an important Blue Ribbon Fishery and any negative impacts to it would result in an economic loss. Since the project will affect the flow regime of stream sections below Scofield Reservoir the state recommends the SDEIS also address the affects of this project on the fishery's and riparian habitat of stream segments below Scofield Reservoir to the Green River.

10-19 Most of the proposed mitigation for this project is from Appendix D, the Fish and Wildlife Coordination Act Report (Coordination Act), which was written in 1994. Again, land ownership and management have changed and the information about fish and wildlife species gained since 1994 in this watershed is considerable. Specifically the Coordination Act and the SDEIS proposes acquiring two miles of stream bank and a section of School and Institutional Trust Lands Administration (SITLA) property for mitigation on lower Fish Creek for mitigation purposes. Wildlife Resources now owns two miles of streambank along lower Fish Creek and manages grazing on nearly one additional square mile of SITLA property. Therefore, purchase or enhancement of this property is no longer a possibility for mitigation of the Narrows Project. Other private lands adjacent to lower Fish Creek below Scofield reservoir may be purchased or enhanced as alternative mitigation for this project. Furthermore, the Coordination Act noted that depredation by mule deer and elk to farmland in Sanpete Valley will increase as a result of this project. In the 1994 report, the cost estimate to Wildlife Resources will be an additional \$2,000 per year. The cost of inflation would put that figure much higher today and the neither the original DEIS nor this SDEIS proposes any mitigation for this direct and perpetual impact to Wildlife Resources. Wildlife Resources recommends updating Appendix D, the Coordination Act.

10-21 Statements in several places in the SDEIS appear to be contradictory and clarification or further information would be necessary to determining the effects of the project. In Section 3.4.3.2.2.3 the SDEIS states flows will be reduced in Fish Creek above Scofield Reservoir during the cutthroat trout spawning and rearing period from April through July. Reduced flows could imply a reduction in aquatic habitat. However, the Instream Flow Incremental Methodology (IFIM) modeling referenced in the SDEIS indicates that spawning habitat will be increased by 15%. Furthermore, this section indicates that reduction in high flows would reduce the sediment transport capacity of the stream and could reduce its spawning value but does not attempt to quantify or measure the post-project effects of reduced high flows. Wildlife Resources recommends further explanation in this section on how spawning habitat will be increased and a determination of the post-project effects on sedimentation in Fish Creek.

The State of Utah appreciates the opportunity to review this proposal and we look forward to working with you on future projects. Please direct any other written questions regarding this correspondence to the Public Lands Policy Coordination Office at the address below, or call Judy Edwards at (801) 537-9023.

Sincerely,



John Harja
Director

¹ 33 U.S.C. § 1341(a)(1).

² 40 C.F.R. § 121.2(a)(4).

³ Friends of Pinto Creek v. EPA (Pinto Creek), 504 F.3d 1007, 1012 (9th cir. 2007)

^{3A} 33 U.S.C. § 1313(c)(2) (A)

⁴ Utah Admin Code R317-2-13

⁵ OPINION OF THE COURT S.&NBSP;D. WARREN CO. V. MAINE BD. OF ENVIRONMENTALPROTECTION 547 U. S. (2006), SUPREME COURT OF THE UNITED STATES NO. 04-1527

ATTACHMENT A

Narrows Reservoir Net Evaporation Estimate

Narrows Project Reservoirs													
Nearest Bob Hill Station													
14.07 Station Annual Precipitation (inches)**													
36.95 Station Annual Temperature (degrees Fahrenheit)**													
25.95 Station Annual Gross E-Lake (inches)**													
14.14 Station Annual Net E-Lake (inches)**													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Percent Daylight Hours**	6.74	6.68	8.28	8.93	10.03	10.11	10.27	9.59	8.39	7.73	6.71	6.54	100.0
E-Lake K**	1.78	2.00	1.98	1.68	1.52	1.21	0.96	1.02	1.20	1.41	1.80	1.58	
Sage Brush K*	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	(83% of basin)
Effective Basin K	0.98	1.02	1.02	0.97	0.94	0.89	0.84	0.85	0.88	0.92	0.99	0.95	
Difference K	0.80	0.98	0.96	0.71	0.58	0.32	0.12	0.17	0.32	0.49	0.81	0.63	
Average Narrows Surface	454 (Average surface area in acres during recreation season, pg S-26)												
Av Res Area Exposed	150 (Difference in acres between full area and average surface area from pg S-26)												
Net Reservoir Depletion	133 (Difference ET)*(Average Reservoir Area)-(Nat. Vegetation ET June-Sep)*(Av Res Area Exposed)												
BUREC Res. Depletion	370 acre-feet/year												
Difference	237 acre-feet/year or 64% Less												
Elevation (feet)													
Narrows Reservoir	8,690												
Scofield Reservoir	7,622												
Temperature (From PRISM 1971-2000 averages)													
Narrows Reservoir	20.28	22.55	27.46	35.47	43.47	52.3	59.36	57.73	49.46	39.81	28.18	21.85	38.16
Scofield Reservoir	15.82	18.81	25.53	35.17	44.98	52.85	59.95	58.33	50.37	40.09	27.23	17.89	37.25
Average	18.05	20.68	26.50	35.32	44.23	52.58	59.66	58.03	49.92	39.95	27.71	19.87	37.71
Precipitation (From PRISM 1971-2000 averages)													
Narrows Reservoir	3.00	2.92	3.15	2.39	2.22	1.32	1.27	1.93	2.16	2.36	2.88	2.39	27.98
Scofield Reservoir	1.22	1.29	1.34	1.09	1.06	0.73	1.00	1.13	1.42	1.43	1.11	0.98	13.80
Average	2.11	2.10	2.24	1.74	1.64	1.03	1.14	1.53	1.79	1.89	1.99	1.69	20.89
Evaporation (open water-inches)													
Narrows Reservoir	0.68	0.78	1.24	1.74	2.75	3.42	3.95	3.64	2.36	1.63	0.99	0.70	23.85
Scofield Reservoir	0.67	0.77	1.24	1.76	2.80	3.48	4.01	3.69	2.39	1.63	0.98	0.70	24.12
Average	0.67	0.77	1.24	1.75	2.77	3.45	3.98	3.67	2.37	1.63	0.98	0.70	23.99
Net Evaporation (inches)													
Narrows Reservoir	-2.32	-2.14	-1.91	-0.65	0.53	2.10	2.68	1.71	0.19	-0.72	-1.90	-1.70	7.20
Scofield Reservoir	-0.54	-0.52	-0.09	0.67	1.74	2.75	3.01	2.56	0.98	0.20	-0.13	-0.28	10.86
Average	-1.43	-1.33	-1.00	0.01	1.13	2.42	2.84	2.13	0.58	-0.26	-1.01	-0.99	9.06
Nat. Vegetation ET (inches)													
Narrows Reservoir	0.40	0.46	0.69	0.92	1.79	2.77	3.67	3.24	1.99	1.06	0.56	0.41	17.96
Scofield Reservoir	0.31	0.38	0.65	0.91	1.97	2.84	3.76	3.32	2.08	1.08	0.54	0.33	18.18
Average	0.36	0.42	0.67	0.91	1.88	2.81	3.71	3.28	2.04	1.07	0.55	0.37	18.07
Difference ET (inches)													
Narrows Reservoir	0.33	0.44	0.66	0.68	1.11	1.01	0.51	0.63	0.71	0.56	0.46	0.27	7.36
Net Difference ET (inches)													
Narrows Reservoir	-2.67	-2.47	-2.49	-1.71	-1.11	-0.31	-0.77	-1.30	-1.45	-1.79	-2.42	-2.12	0.00

Python script h:\qro\et\LeeSporleder\ProcessPondWea.py
Results in h:\qro\et\LeeSporleder\NarrowsEvap.dbf
Temperature and precipitation extracted from PRISM 30-year normal grids, 1971-2000
Excel Workbook: O:\users\cmiller\qro\ET\Lee Sporleders Ponds\ET estimates for Lee.xls worksheet Narrows

* Crop Coefficients for Rangeland, Journal of Range Management, Vol 43, No. 6 (Nov 1990), pp. 482-485

** Consumptive Use of Irrigated Crops in Utah, Research Report 145

Sum of evaporation for positive months only
Sum of evaporation for all months
Natural vegetation ET, June through September

Assumptions:

1. The undeveloped reservoir basin is either covered with vegetation or snow.
2. The use of a constant KC during the year is conservative when estimating ET for this situation.
3. The basin KC coefficient is derived using 83% sagebrush and 17% open water KC.
4. The reservoir basin has been stripped of vegetation during construction.
5. The reservoir basin is covered by snow from October to May.

11. UTAH FARM BUREAU FEDERATION, LELAND J. HOGAN, PRESIDENT

HL


Utah Farm Bureau Federation
 9865 South State Street, Sandy • Utah 84070-3205 • Fax: (801) 233-3030
 www.fb.com/utfb

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MAY 04 '10

LELAND J. HOGAN
PRESIDENT
(801) 233-3040

ORIGINAL

Reply Date		
Date	Initials	Code
5/4	ESF	100
	PK	105
	PC	107
	PC	200
5/7/10	ESF	770
5/10/10	PC	7740y

April 29, 2010

Peter Crookston, PRO-774
Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606

Action:
Classification: ENV-6.00
Project: Narrows
Classification: 10029195
ID: 1122816

Dear Sir:

- 11-1 The Utah Farm Bureau Federation is an organization of farmers and ranchers in the state of Utah. We represent the interests of agriculture and develop policy through a grassroots process that is representative of our membership. There are more than 27,000 member families who belong to Farm Bureau in Utah.

Through our annual policy development process, current policy in support of the Gooseberry Narrows Project has been analyzed, debated and adopted over the past several decades. We have watched this issue for many years as the water rights have been determined and attempts have been made to move the project to completion. We would like to offer the following regarding the SDEIS (Supplemental Draft EIS).

Our support of the project is based upon the following factors:

1. Sanpete County clearly owns the water rights involved. The Utah Supreme Court and the Department of Justice have both acknowledged this.
2. Sanpete County has a demonstrable need for the water. Water storage is limited so agriculture and community development is limited. Once runoff has occurred this is no water available. Storage of the approximately 5500 acre feet of water in this project is imperative for Sanpete County.
3. The Narrows project fulfills the intent of a project that was initiated more than 70 years ago. The original plan provided water storage of 30,000 acre feet for Carbon County. Carbon County received their water over 50 years ago and Sanpete has not received its water storage that it was promised.

Gooseberry Narrows Project
Page 2

4. Construction of the project will have a favorable jobs impact, creating 369 job years of employment. These jobs will in turn create a positive impact the local economy and tax revenues.
5. Mitigation concerns are outlined in the SDEIS that will address impacts made to the environment. Mitigation dollars of approximately \$4 million (which is over 10% of the project) has been budgeted to address environmental concerns.
6. Efforts to complete this project have begun and been halted several times in recent years. Contracts have been signed and broken. Public dollars have been wasted and the integrity for the process has been questioned. Integrity and trust must be solidified and to provide fairness to the affected parties.

Countless hours invested by individuals, organizations and government have been wasted during the past several decades not to mention the amount of money that has been expended without results. We ask the Bureau of Reclamation along with our state and national political leaders to bring this project to completion. The project has legitimacy and will be beneficial to those holding the water rights. It will bring produce positive results, with the benefits far outweighing any suggested adverse impacts to the environment.

Farm Bureau was in attendance at the hearing held in Manti on April 28th at the Manti City Hall. All of those who spoke to the issue were in support of the project with two speakers mentioning some minor concerns but they did not express opposition to the project.

We appreciate the opportunity to provide comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Leland Hogan", with a stylized flourish at the end.

Leland Hogan
President

**12. UTAH GENERAL STATE SENATE, 2009, RESOLUTION,
RALPH OKERLUND, SPONSOR**

ORIGINAL

12-1 **Enrolled Copy**

S.R. 2

1 **SENATE RESOLUTION SUPPORTING THE**
2 **NARROWS WATER PROJECT IN CENTRAL**
3 **UTAH**
4 2009 GENERAL SESSION
5 STATE OF UTAH
6 **Chief Sponsor: Ralph Okerlund**

8 **LONG TITLE**

9 **General Description:**

10 This resolution of the Senate urges Congress and the United States Bureau of
11 Reclamation to support development of the Narrows Water Project in Central Utah.

12 **Highlighted Provisions:**

13 This resolution:

- 14 ▶ recognizes the need for adequate water storage for economic viability in the
15 communities of Central Utah, and the decades-long effort to develop the Narrows
16 Water Project;
- 17 ▶ acknowledges the Narrows Water Project as the least expensive, most cost-
18 effective, and most environmentally sound means of storing water in Sanpete County;
- 19 ▶ recognizes that the water rights relative to the Narrows Water Project have been
20 legally defined; and
- 21 ▶ expresses support for the development of the Narrows Water Project in Central
22 Utah.

23 **Special Clauses:**

24 None

26 *Be it resolved by the Senate of the state of Utah:*

27 WHEREAS, water is fundamental to the economic base of Central Utah communities,
28 and reliable water storage is necessary for both agricultural and municipal development;

S.R. 2

Enrolled Copy

29 WHEREAS, agricultural and municipal interests in Central Utah, including Sanpete
30 County, suffer substantial economic hardship because of the lack of water storage facilities;

31 WHEREAS, in the early 1900s, local, state, and federal government officials
32 acknowledged the need for water storage in Sanpete County and began efforts to develop the
33 Narrows Water Project;

34 WHEREAS, reliable studies by multiple expert water engineering firms have
35 determined the Narrows Water Project to be the least expensive, most cost-effective, and most
36 environmentally sound means of storing water for Sanpete County;

37 WHEREAS, various studies, including a recent independent study by Utah State
38 University, show Sanpete County to be among Utah's most effective users of modern
39 conservation methods to conserve the water that is presently available to the county;

40 WHEREAS, the Bureau of Reclamation recognized the need for water storage in
41 Sanpete County, and as early as the 1930s proposed a plan that would provide water storage
42 for both Sanpete and Carbon Counties;

43 WHEREAS, the component of the Bureau of Reclamation's plan that would provide
44 water storage for Sanpete County was never implemented, initially due to a disruption caused
45 by World War II, and more recently by various questions regarding ownership of the water;

46 WHEREAS, numerous judicial decisions have now clearly established and defined the
47 water rights involved in the Narrows Water Project;

48 WHEREAS, legal agreements between Sanpete County, Carbon County, the state of
49 Utah, and various federal entities have recognized Carbon and Sanpete Counties' water rights
50 from Gooseberry Creek; and

51 WHEREAS, the residents of Sanpete County, at great financial sacrifice, have waited
52 for almost a century for the Narrows Water Project water storage facility that was promised to
53 them:

54 NOW, THEREFORE, BE IT RESOLVED that the Senate of the state of Utah
55 expresses support for the Narrows Water Project in Central Utah.

56 BE IT FURTHER RESOLVED that the Senate urges Congress and the United States

Enrolled Copy

S.R. 2

57 Bureau of Reclamation to support the development of the Narrows Water Project in Central
58 Utah.

59 BE IT FURTHER RESOLVED that a copy of this resolution be sent to the Bureau of
60 Reclamation and to Utah's congressional delegation.

13. UTAH STATE HOUSE OF REPRESENTATIVES,
REPRESENTATIVE BRADLEY DAW, DISTRICT 60

AL

ORIGINAL
HOUSE OF REPRESENTATIVES
STATE OF UTAH
PRO OFFICIAL FILE COPY
RECEIVED
APR 19 '10

REPRESENTATIVE
BRADLEY M. DAW
DISTRICT 60
UTAH COUNTY



Bureau of Reclamation
Peter Crookston, PRO-774
302 E 1860 S
Provo, UT 84606

13-1 Mr. Crookston:

I am writing in strong support of moving ahead with the Narrows Water Storage project in Sanpete County. This is a project of great importance to the residents and farmers of the area and is also a project that is very long overdue.

The fact is that water is the lifeblood of any community and in the case of a farming community this is even more true. For years the farmers in the region have struggled to make ends meet while the water that is clearly owned by them flows downstream. This needs to end and all of us need to give farmers in the region the chance to make a good living by having sufficient water to generate a good harvest. Having been reared on a farm myself, I am sensitive to just how vital a good water supply is to a farm. It is the difference between profit and loss.

This is a project that has been promised to the people of Sanpete for nearly 80 years. That's an incredibly long time to wait for the fulfillment of a promise and I hope that you can bring that promise to fruition.

Please let me know how I can be of service at the state level and what resources would assist in bringing this project forward.

Thank you for your time.

A handwritten signature in black ink, appearing to read "Brad Daw".

Representative Brad Daw

Reply Date	842 E. 280 S.
Date	OREM, UTAH 84097
Initial	HOME (801) 226-8079
	E-Mail: pro@leg.utah.gov
4/19	105
4/20/10	107
4/20/10	700
4/20/10	770
4/20/10	774 cy
Action:	
Classification:	E141-10.00
Project:	Narrows
Committee:	10024846
File ID:	1122816

14. UTAH STATE HOUSE OF REPRESENTATIVES,
REPRESENTATIVE KAY L. MCLEFF, DISTRICT 70

AL

ORIGINAL
HOUSE OF REPRESENTATIVES
STATE OF UTAH

PRO OFFICIAL FILE COPY
RECEIVED
APR 29 '10

REPRESENTATIVE
KAY L. MCLEFF
DISTRICT 70
EMERY, SANPETE AND
SEVIER COUNTIES



April 28, 2010

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606

Re: Narrows Project

Reply Date	225 N. 100 E.
Date	RICHFIELD, UTAH 84701
	PHONE (435) 608-4461
	CELL (801) 608-4331
	E-Mail: kay@utah.gov
4/25	108
	105
	107
	700
5/14/10	770
5/27/10	77404

Action:

Classification: ENV-6.00

File # Narrows

Case # 100-28033

File # 1122816

14-1 To the Decision Makers:

The long delayed Narrows Project should move to fruition as rapidly as possible. This project has been the subject of discussion, debate, studies and litigation. Everyone has had fair opportunity for input and agreements and decisions have been reached. The passage of time has served only to make the project more costly.

I have personally reviewed prior agreements and legal decisions. As always, there are those who would like to start over. As the chief justice of the supreme court once told me, "Sometimes you just have to move on to the next case." That is my honest assessment of the Narrows Project. There will always be plenty of new things about which we will want and need to debate, discuss, and perhaps even litigate, but it shouldn't be the Narrows Project. That one simply needs to be completed. It is now time to encourage affirmative action by the Bureau in a timely manner.

Sincerely,

Representative Kay L. McLiff

KLM:kt

Cc: Sanpete Water Conservancy District

HOUSE OF REPRESENTATIVES
STATE OF UTAH
REP. KAY L. MCLEFF
DISTRICT 70
225 N. 100 E.
RICHFIELD, UTAH 84701

15. UTAH STATE HOUSE OF REPRESENTATIVES,
REPRESENTATIVE MICHAEL MORLEY, DISTRICT 66

REPRESENTATIVE
MICHAEL MORLEY
DISTRICT 66
UTAH COUNTY

April 18, 2010

Peter Crookston
Bureau of Reclamation
302 East 1860 South
Provo, UT 84606

Re: Comments on Narrows Project SDEIS

Dear Peter:

15-1

I am writing to encourage the Bureau of Reclamation to proceed with The Narrows Project in Sanpete County. It will be a significant economic benefit to the county, based both on the increased agricultural production it will provide and on the economic benefits inherent in the project's construction. Now, of all times, we need the jobs the project will create.

I have owned and managed a commercial construction firm for many years. While my firm would not be a candidate for any of the work involved in creating the Narrows, I have a strong sense of the favorable economic impact building the Narrows will have on Sanpete and surrounding counties. The Narrows will be a significant economic asset to the area for many decades to come. We need the jobs and increased commerce it will help create.

Based on what I understand from the Reclamation's SDEIS and other sources, it appears that one of the reasons the Narrows has not yet been built is because of various objections for many years from Carbon County. I was born and raised in Carbon County. My family and I have deep roots there. It's my sense that many people in Carbon would be bothered, if not appalled, if they were aware that their elected officials and others were objecting to Sanpete's water project, particularly if they understood the relationship between the expansion of Scofield many years ago and the fact that the Scofield expansion was part of a "package" that included a commitment to build the Narrows.

I can't speak for Carbon County, but I know many people there and know of their desire to do the right thing. If they were aware of the relationship between Scofield and the Narrows, that Carbon received the water storage that was promised to it and that Sanpete is having difficulties getting the water storage that was promised at the same time, many would be very uncomfortable about Carbon County hindering the Narrows.

These are some of the reasons the Utah House of Representatives passed (by a very wide margin) a resolution in 2008 favoring construction of the Narrows. The Senate did the same the following year.

I encourage you to move the Narrows project ahead as soon as reasonably possible. It's the right thing to do. We need the jobs and we need to keep our promises to Sanpete County.

Sincerely,


Rep. Mike Morley

ORIGINAL

HOUSE OF REPRESENTATIVES
STATE OF UTAH

PRO OFFICIAL FILE COPY
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APR 23 '10

678 W. 350 N.
SPANISH FORK, UTAH 84660
Date: 5/3/10
E-Mail: mikemorley@utah.gov

Reply Date	678 W. 350 N.
5/3/10	100
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Amigos:
Classification: ENV-10-00
Title: Narrows
Case No: 10052793
Date: 11/28/10

**16. UTAH STATE HOUSE OF REPRESENTATIVES,
REPRESENTATIVE BILL WRIGHT, DISTRICT 68**

**REPRESENTATIVE
BILL WRIGHT
DISTRICT 68
JUAB, MILLARD, AND
SANPETE COUNTIES**



Mary 25, 2010

Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606-7317

Re: Narrows Project

PRO OFFICIAL FILE		
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VES MAY 26 '10		
Reply Date		
Date	Initials	Cost
5/27/10	105	
P.O. BOX 126		
HOLDEN, UTAH 84636		
HOME (435) 864-4887		
CELL (801) 404-7066		
E-MAIL: billwright@utah.gov		
Action:		
Classification: ENV - 6.00		
Project: APPROVALS		
Control file:		
Order I.D.: 10035706		
1122910		

16-1

I'm writing to comment on the recently-released Supplemental Draft Environmental Impact Statement for the Narrows Project in Sanpete County. I strongly urge the Bureau of Reclamation to come to a favorable Record of Decision for the Narrows as soon as possible.

As I review the history of the Narrows, particularly in relationship to water storage provided to Carbon County in the form of Scofield Reservoir, it seems to me that Sanpete County has been significantly underserved by federal actions for many decades. For reasons of coincidence, bad timing, Sanpete's willingness to take a soft approach to negotiations, or for whatever other reasons, Sanpete appears to have become the "poor boy" between it and its neighbors for a lot of years.

In attempting to quantify that, I've identified eleven major events (I suspect there are more), dating back to 1943, in which it appears that Sanpete has conceded to other interests. They are:

Concession #1, 1943: Put the Narrows on hold. Reconstruct Scofield First.

In 1943, Sanpete County agreed to put their own water interests aside and support the decision to reconstruct Scofield first. This was done as a good-faith effort to avoid potential failure of Scofield Dam which would have hindered America's war effort.

Concession #2, 1944: Agree to pay for part of the Scofield Rehabilitation.

Sanpete agreed to pay for a portion of the Scofield Dam reconstruction, even though Sanpete would not benefit from Scofield's enlargement until the Narrows is built. None of the benefits for the 1943 enlargement/strengthening of Scofield accrued to Sanpete.

Sanpete's payment obligation is still in effect and will begin when the Narrows is complete.

Concessions 3-7, 1984: The "Compromise Agreement."

By 1984, Carbon County's objections to the Narrows Project had become so fierce and obstreperous (even though Carbon had enjoyed several decades of enlarged/enhanced water storage in Scofield), that Sanpete consented to numerous major compromises, simply to end the arguments and make way for Sanpete's badly-needed water storage project.

Bureau of Reclamation
Page 2

Compromises by Sanpete included:

#3: Relinquishing and withdrawing portions of its water rights.

#4: Agreeing to reduce the amount of water Sanpete would be able to store and use from Bureau of Reclamation's originally proposed 11,700 acre-feet to 5,400 acre feet.

#5: Restricting sources of water supply by excluding several stream sources.

#6: Limiting the amount of water that could be stored in the Narrows Reservoir.

#7: Relinquishing the historic "Mammoth" dam site (the originally-intended site of Sanpete's water storage) and locating the proposed dam/reservoir to the current Narrows site.

In exchange for these compromises, Carbon agreed (in writing) to cease its objections to the Narrows. As of the April 29, 2010, comment meeting in Price, Carbon had surely not ceased its objections.

Concession #8, 1994: Additional mitigation measures.

In spite of its contract not to, Carbon continued to object. Based largely on complaints by Carbon County, Sanpete agreed in 1994 to provide numerous additional fish, wildlife, wetlands and water quality mitigation, to plans that already included generous allotments of those and other mitigation items. The estimated cost (including in the current Narrows budget) of these additional items is \$3.7 million.

Concession #9, 1995: Agree to prepare a new Environmental Impact Study.

In 1995, after numerous years of effort, Sanpete had fully complied with the required Environmental Impact Study procedure. The Bureau of Reclamation had prepared an independent EIS on the Narrows Project (which Sanpete County was required to pay for), and the EIS process had worked its way through the highly-bureaucratic (and expensive) process to a Record of Decision that favored moving ahead with the Narrows.

In yet another effort to thwart the Narrows, Carbon County challenged the EIS in court, threatening what would surely have been lengthy and expensive litigation.

In another capitulation, Sanpete agreed to have Reclamation rescind the Record of Decision, and prepare a new EIS--at Sanpete's repeated expense.

Bureau of Reclamation

Page 3

Concession #10, 2006: Extend the proverbial "olive branch."

In an effort to resolve differences and be good neighbors, a delegation of Sanpete County and Narrows Project representatives initiated a meeting with Carbon County and went to them on March 15, 2006, to discuss the Narrows Project and to find areas of mutual agreement and cooperation. The meeting was held at Sanpete's suggestion, at Carbon's offices in Price.

Concession #11, 2006: Agree to an independent third party review.

Five months after the meeting referenced above (Concession #10), Carbon County suggested that an independent third party be hired to review alternatives to the Narrows Dam proposed by Carbon. Did Carbon offer to help pay for the study? No. Payment for the expensive study became Sanpete's responsibility, taking away dollars that were earmarked for other badly needed water projects in Sanpete.

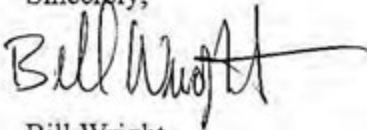
Sanpete agreed, hoping that perhaps a responsible, unbiased third-party arbitrator could bring agreement on the Narrows matter. The third-party review was commissioned and delayed completion of the new SDEIS by nearly four years, at substantial expense to Sanpete.

This third-party report was completed in the fall of 2008. It observed that the alternative project configuration proposed by Carbon is not feasible (which is what Sanpete's engineering studies indicated over ten years earlier).

Sanpete has waited far beyond a reasonable amount of time to get the water storage they were promised. Enough is enough, and the scales of fairness need to balance. The question of integrity also arises. At what point do various levels of government need to make good on promises made decades ago to Sanpete? It seems we owe the Narrows to Sanpete on the basis of honesty, if nothing else (and there are surely many more reasons beyond honesty).

From my perspective as a second-time member of Utah's House of Representatives (and former member of Utah's State Senate), it seems to me that Reclamation should make every effort to move the Narrows Project ahead as soon as possible. I strongly urge you to complete the process and come to a favorable Record of Decision for the Narrows; and do so quickly.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Wright", with a long horizontal flourish extending to the right.

Bill Wright
Representative

**17. UTAH STATE ENGINEERS OFFICE, DAVID MARBLE, P.E.,
ASSISTANT UTAH STATE ENGINEER – DAM SAFETY**

Thu 4/22/2010 5:10 PM

My name is David Marble. I administer the Dam Safety and Stream Alteration programs in the Utah State Engineers Office. I appreciate receiving a copy of the Supplemental Draft Environmental Impact Statement (SDEIS) for the proposed Narrows Project.

I wish to comment on section 1.8 - "Permits, Authorizations, and Agreement"

- 17-1 As indicated in the report, this will be a non-federal project owned by the Sanpete Water Conservancy District. As such, a State Dam Safety permit will be required to build the structure. This requirement was not included in the referenced section. Also, this section indicates that a USACE Section 404 or State Stream Alteration Permit will be required. Whether or not USACE requires an Individual permit under Section 404 or not, the State will still require a Stream Alteration Permit.

David Marble

David K. Marble, P.E.
Assistant Utah State Engineer / Dam Safety
(801) 538-7376
davemarble@utah.gov

18. UTAH STATE SENATE, SENATOR JOHN L. VALENTINE, DISTRICT 14

716

ORIGINAL

SENATE
STATE OF UTAH

SENATOR JOHN L. VALENTINE

HOME:

857 East 970 North
Orem, UT 84057
(801) 224-1693

OFFICE:

120 East 300 North
Provo, Utah 84603-1248
(801) 373-6345

Fax: (801) 377-4991

E-MAIL: (through website: www.leg.state.ut.us)

PRO OFFICIAL FILE COPY

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Reply Date	Initials	Code
		100
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		167
		700

SENATE COMMITTEES

PRESIDENT OF THE SENATE (2004-2008)

Business and Labor Committee, Chairman

Revenue and Taxation Committee

Ethics Committee

Action: Higher Education

Appropriation Subcommittee

Co-Chairman

Committee on

ID: 1122816

ENV-16.00
NARROWS

June 1, 2010

Bureau of Reclamation

Attention: Peter Crookston, PRO-774

302 East 1860 South

Provo, Utah 84606

Re: Comment on SDEIS Narrows Project, Sanpete County, Utah.

- 18-1 Thank you for considering comments on the Supplemental Draft Environmental Impact Statement for the Gooseberry Creek, Narrows Project.

I have watched the Narrows Project process for a number of years with considerable interest from my perspective as a Utah State Senator. I was President of the Utah State Senate in 2008 when a strong majority of the Senate passed Senate Resolution 2, favoring the Narrows Project.

Decades of fights over the Sanpete County portion of the original Gooseberry Project Plan were presumably resolved on June 8, 1984. It troubles me that those agreements were broken and 26 years after the 1984 Agreement, we are still attempting to resolve the competing interest of two drainage basins in Utah. The promises made in the 1984 comprehensive Settlement Agreement resulted in the 1998 Final Environmental Impact Statement, which this SDEIS supplements. It is now time to end the controversy between the two basins and allow the people of Sanpete County to use their water. The "Do Nothing" option is simply not acceptable.

There is no question that Carbon County interests will not be happy when the Narrows Project is instituted. Given the tenure of disagreements on this issue and the many compromises that have been made in Carbon's favor, Reclamation, the State of Utah, and others may simply have to accept the fact that Carbon is not going to be happy. But they have what was promised to them; Sanpete

Bureau of Reclamation
June 1, 2010
Page 2

needs to be given what was promised to them. There is no breach of integrity by granting Sanpete the use of its water. Failing to do so is a breach of integrity.

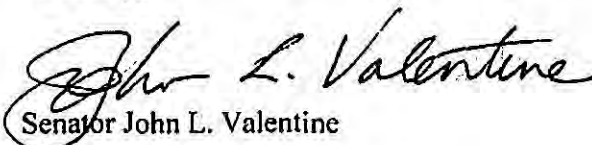
Many have commented on the fact that Scofield Reservoir will have a loss of water flowing into it if the Narrows Project is completed. The SDEIS acknowledges this fact, but the water "loss" to Scofield Reservoir and its water users, is water that rightfully belongs to the water users of Sanpete County. In other words, the Carbon County water users have been using the water legally owned by the water owners in Sanpete County due to the construction and then renovation of Scofield Reservoir. It is now time for the Sanpete County water owners to be able to use their water.

Another criticism focuses on the number of alternatives considered by the SDEIS. The SDEIS expands the number of alternatives presented in the original DEIS, including three alternative reservoirs of varying sizes, complimenting water conservation efforts. Some of the alternatives proposed by the critics of the SDEIS appear to be nothing but a new effort to repudiate the 1984 agreement. Alternatives, however, are probably not even required. The purpose of the project is to integrate delivery of water to both basins. NEPA does not require consideration of alternatives which substantially alter that goal.

My final observation is purely environmental in its nature. I am an avid outdoorsman. I have backpacked, fished and hunted many of the lands of this state. I have protected the land through multiple public-private partnerships, including my present project in Rock Canyon, Utah County. Protecting our lands, rivers, streams, wildlife and other God-given assets is a moral imperative with me. The small Narrows Reservoir will be a beautiful improvement to the existing basin; the new recreational potential will be an asset to our state, and the minor problems enumerated in the SDEIS are an acceptable trade for the assets the Narrows Project will create.

Thank you for considering these comments. I would urge you to proceed with the Proposed Action Alternative for the Gooseberry Creek Narrows Project, and resolve once and for all this "water war" in Utah.

Sincerely,



Senator John L. Valentine

(Not Printed or Mailed at State Expense)

19. UTAH STATE SENATE, RALPH OKERLUND, DISTRICT 24

SENATOR
RALPH OKERLUND
TWENTY-FOURTH DISTRICT



ORIGINAL

UTAH STATE SENATE

320 STATE CAPITOL • P.O. BOX 145115 • SALT LAKE CITY, UTAH 84114
801-538-1035 • www.utahsenate.org

248 S. 500 W.
MONROE, UT 84754
(H) 435-527-3370
(C) 435-979-7077
(F) 435-527-3370
rokerlund@utahsenate.org

May 26, 2010

Bureau of Reclamations, Attn: Peter Crookston, Pro-774
302 East 1860 South
Provo, UT 84606

Dear Sir,

19-1 I am writing today to confirm my support for the Narrows Dam and Reservoir and to emphasize the need and benefits of this long-promised project for the entire State of Utah. Northern Sanpete County has suffered for many years from water shortage while waiting for this important project to move forward. Other projects that benefit from this drainage have greatly blessed the lives of people and added tremendously to the economies of Carbon and other counties. It is only fair that Sanpete County may, finally, get its project.

The Utah State Legislature recognized the importance of this project by passing HR1 and SR2 in the 2009 legislative session. After debate in committees and on the floor of both Houses, the resolutions passed with overwhelming support for the project. The Legislature obviously understands the great benefit to the economy of the entire Central Region of the State. Sanpete County is growing in population as it is close enough to the Wasatch Front for commuting or for business interaction. This water storage will support this growth and greatly enhance the opportunities and tax-base that Sanpete County has waited for many decades to realize.

The water ownership issues have been negotiated, litigated, and adjudicated. The only issue remaining is how to allow this important area of our State to best use their extremely valuable resource. After years of study and negotiation, it is obvious that the answer is to move forward with the Narrows Project which is critical to the development of Sanpete County and the State of Utah.

Sincerely,

Senator Ralph Okerlund
Utah State Senate – District 24

**20. UTAH STATE UNIVERSITY AGRICULTURE EXTENSION, MATTHEW PALMER,
UTAH STATE AGRICULTURE EXTENSION AGENT, SANPETE COUNTY**

Crookston, Peter L

ORIGINAL

From: Matthew Palmer [matt.palmer@usu.edu]
Sent: Wednesday, April 21, 2010 9:53 AM
To: PRO NarrowsEIS
Subject: Sanpete County Narrows Project

Dear Bureau of Reclamation Representative:

20-1 I am the Utah State University Agriculture Extension Agent in Sanpete County. As an Agriculture Extension Agent I develop research and educational programs to improve farm and ranch production and quality of life. The best way to improve farm and ranch productivity and quality of life is to reduce input costs and increase income. Late season water provided through the Narrows Project would reduce input cost and increase farm income.

The Narrows project would give producers enough water to produce 3 crops of hay instead of 1.5. This would lower the input cost by spreading the farm equipment expenses over more crops while improving the quality and price of forage that would be produced. This would increase farm revenues and improve the local economy.

In looking at communities though out Utah and the Western United States, most communities have water storage facilities to increase the supply of water later in the season and reduce the effect of extended droughts. Government agencies have helped these communities to have reservoirs for this purpose. Sanpete County Water Conservancy District has been working to develop the Narrows Dam and Reservoir to improve the lives of the residents for 40 years. Why has it not been complete?

Sanpete County owns the water for the Narrows Project (as proven in court), has completed the Environmental Impact Statement and the Engineering documents. The Narrows Dam and Reservoir needs to be complete this year without further delay. Please follow through with 40 years of promises and complete the Narrows Dam.

Matthew Palmer
USU Extension Agent
Sanpete County

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	MS	107
	KS	106
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7/22/10	PC	7740y

ENV-6.00
Narrows
10044391
1122816

LOCAL AGENCIES

- 21. Carbon County Chamber of Commerce Board**
- 22. Carbon County Commissioner, William D. Krompel**
- 23. Centerfield City, Thomas Sorensen, Mayor**
- 24. Ephraim City Manager, Richard Anderson**
- 25. Ephraim City Planning Director, Bryan Kimball**
- 26. Ephraim City, Mayor, David Parrish**
- 27. Fairview City, Mayor Benson**
- 28. Fairview City, Treasurer, Kammy Tucker**
- 29. Gunnison City, Larry Jensen, City Council Member**
- 30. Gunnison City, Steven Buchanan, City Council Member**
- 31. Gunnison City, Trevor Powell, City Council Member**
- 32. Gunnison City, Lori Nay, Mayor**
- 33. Helper City Councilman, Gary Harwood**
- 34. Manti City, Natasha Madsen, Mayor**
- 35. Mt. Pleasant City, Sally East, City Administrator**
- 36. Mt. Pleasant City, Sandra S. Bigler, Mayor; Justin Atkinson, Councilman; Monte Bona, Councilman; Michael Hafen, Councilman; Coleen Oltrogge, Councilwoman; Reed Thomas, Councilman**
- 37. Price City, Garry Sonntag, Public Works Director**
- 38. Price City Public Works, Russell Seeley, Price City Engineer**
- 39. Sanpete County Commissioner Spencer Cox**
- 40. Sanpete County Commissioner Steve Frischknecht**
- 41. Sanpete County Commissioner Claudia Jarrett, Chair**
- 42. Sanpete County Farm Bureau, Rodgt vD. Bessey, President**
- 43. Sanpete County FSA, Val Anderson, Executive Director**
- 44. Sanpete County Recorder, Reed D. Hatch**
- 45. Sanpete Count Sheriff's Office, Amanda Bennett, Jail Receptionist**
- 46. Sanpete County Sheriff's Office, Kevin G. Holman, County Sheriff**
- 47. Sanpete County Soil Conservation District, Scott Sunderland, Chair**
- 48. Spring City, Pamela Anderson, City Council Person**

21. CARBON COUNTY CHAMBER OF COMMERCE BOARD

ORIGINAL

CARBON COUNTY
Chamber of Commerce

May 27, 2010

Mr. Peter Crookston
PRO-774
Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606-7317

PRO OFFICIAL FILE COPY
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Reply Date		
Date	Initials	Code
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Action:		
Classification: ENU-6.00		
To: Narrows		
Classification: 10037455		
Date: 1122816		

Dear Mr. Crookston:

We would like to address the issue of Sanpete County's proposal to build the Gooseberry Narrows Reservoir Project and the catastrophic affect it would have on Carbon County and surrounding areas.

As you are very well aware, this issue has been fought over for decades and each time that it is brought to a head the results have always been the same: it is not practical. So why are we talking about it again and wasting taxpayers dollars year after year?

The facts of the matter have not changed throughout the years, such as:

- ~Scofield Reservoir only has water spilling over the spillway about one-third of the time and no spillway water since 2000; pretty costly project for such a minimal amount of water.
- ~During drought years Carbon County residents would be completely out of water just so North Sanpete County can have a couple more hay crops per year: the priorities are distorted.
- ~Construction costs of this project far outweigh the benefits of additional hay crops at taxpayers expense through Federal and State tax subsidies.
- ~Rocky Mountain Power's Carbon Power Plant would have to either close its doors during drought years or lease water which would result in higher utility rates but there would be no one left in Carbon County to pay. How do residents on the Wasatch Front feel about not having power or to have to pay exorbitant utility rates at their homes in Scofield?
- ~We cannot even begin to properly predict the total environmental devastation: there is not one environmental group that is in favor of this project.
- ~North Sanpete County would receive 100% of their water allocations even in drought years whereas Carbon County would be lucky to anticipate 50% but in reality even less: so that Sanpete County can have a few more hay crops a year.
- ~About 89% of the water would be used by only 250 farmers in North Sanpete County versus the entire population of Carbon County of over 20,000 residents who use the water for culinary purposes: alfalfa vs. people.

81 North 200 East, #3 Price, Utah 84501
Telephone (435) 637-2788 Fax (435) 637-7010 Email ccchamber@priceutah.net

- ~~In 1984 a legal agreement allowed Sanpete County an additional 5,400 acre feet of water which has not been put to beneficial use by the Sanpete Water Conservancy District: the monies spent all these years in legal fees could have been better utilized by Sanpete County to train their water conservancy district how to use the water they currently have to their best advantage; not to mention the legal fees spent throughout the years by Carbon County which also could have been put to much better use than combating such a ridiculous project.
- ~~Arch Coal's Skyline Mine would not be able to mine the coal under Flat Canyon which is located in Sanpete County: mineral lease monies garnered from this future mining of 50 million tons of coal would bring more money to Sanpete County than a few extra hay sales; and if Skyline is not allowed to mine that coal seam many miners will lose their jobs. Currently 173 miners employed at Skyline Mine reside in Sanpete County.
- ~~Diverting water from Carbon County would endanger the coal, gas and power industries impacting state-wide rate payers: all for a handful of farmers in North Sanpete County.
- ~~Helper, Price and Wellington city fire departments have indicated that during past drought years their storage tanks were so low that if this diversion had been in place during that same time period that they would not have had enough water to protect our county from a major fire: but there would have been a couple extra hay crops in Sanpete County.

It is obvious to anyone who reviews the pros and cons of this project that there is not one ounce of logic behind North Sanpete County's reasoning for building the Gooseberry Narrows Reservoir. It will adversely impact our local economy in Carbon County because without water residents and businesses will have no choice but to leave the area.

- 21-1 The data in the Environmental Impact Statement (EIS) that you are using dates back to the 1970's, 1980's and 1990's. EIS information cannot be more than seven (7) to ten
- 21-2 (10) years old. There is no current evaluation of the impact of the water degradation; the dam design is only rated at a 5.4 on the Richter scale and this project would be located
- 21-3 near an active fault line. The Scofield dam was required to be built at a 7.5 earthquake rating. The lower requirement puts many lives at risk and why is that allowed?
- 21-4 The costs currently estimated in the EIS are sorely understated. Just to name a few expenses not included: rehabilitation of the tunnel, the purchase of land needed, the cost of right-a-ways, and the septic system. So how can an appropriate decision be made if not all the information is contained in the study?
- 21-5 The current DEIS states that the cost per acre foot of water is estimated at \$185 but this is not taking into account any interest charges. If interest were to be roughly calculated, the cost per acre foot would be closer to \$285. Hay sells are approximately \$100 to \$120 per ton. So how does Sanpete County plan to pay back the monies based on a negative income balance? When you do the math the project should be null and void.

Apparently the detailed financial information provided by Sanpete County to the BOR is not forthcoming to Carbon County despite the many requests. It is imperative that Sanpete County have proof of funding available for payment so that this project is not funded by the federal government: aka the taxpayers. Sanpete County is already the most profoundly financed county in Utah but they do not contribute back into the state coffers such as Carbon and Emery Counties do through mineral lease and severance taxes paid by coal mines and gas production. Sanpete County receives state benefits of \$4.38 for every \$1.00 they pay in state taxes. Carbon and Emery Counties only receive \$1.44 and \$1.51 respectively. So why would we continue to enable their financial dependence by allowing this project to be constructed at the vast expense of the remainder of the state and the entire nation?

The Carbon County Chamber Of Commerce Board of Directors will assume that you are looking at this proposal as if it were your business spending your personal money on this project. If you can unequivocally say that this makes "good business sense", then by all means go for it.

21-6

District 69 Representative Christine Watkins stated at the public hearing held in Price, Utah on April 29th that when North Sanpete County recently brought this issue before the Utah State Legislators, they indicated that it was needed for culinary and recreational purposes. Up until this point in time all past litigation by North Sanpete County regarding this matter indicated that it was for their farmers to produce a few extra hay crops a year. So which is it: culinary & recreational or agricultural? It seems that North Sanpete County is misleading our state legislators in order to get State approval.

Just for arguments sake, if they are looking to use the additional water for recreational purposes it would be interesting to see the details as to what else they can add to their existing list of recreational facilities available in their area such as: Electric Lake, Bolger Reservoir, Fairview Lakes, Gooseberry Lake, Upper and Lower Fish Creek (which is a blue ribbon trout stream) and also Scofield Reservoir, just to name a few. How many more water-related recreational resources are needed that aren't already met?

In 2008 when Sanpete County officials lobbied our state legislators they asked for a letter of support from then Governor Huntsman. As a businessman Governor Huntsman thought it best to get both sides of the story and delegated the rural affairs director, Gayle McKeachnie, to hear Carbon County's response on this matter. Carbon County Commissioner, William Krompel, provided Mr. McKeachnie pertinent information and conclusions based on facts. We hope that you have that report at your disposal and review it carefully.

The Carbon County Chamber Of Commerce insists that a new impact study be provided to include up-to-date information, costs and requirements; and that all pertinent DEIS, NEPA and financial information is provided to Carbon County upon their request before the BOR is allowed to go any further on this project. It only makes "good business sense" to have all the current, reliable, and pertinent information at your disposal in order for the BOR to make an educated decision; not one based on political influence.

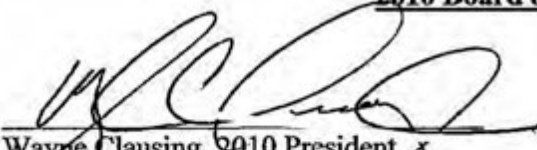
The Gooseberry Narrows Reservoir Project needs to be stopped now and permanently dismissed by your department. Taxpayers are tired of continuously spending county funds on an issue that should have been never brought up again. It's time to cease and desist.

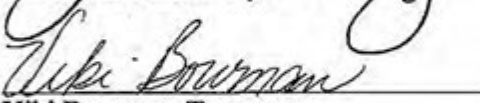
Thank you for your time in this manner and the Carbon County Chamber Of Commerce Board of Directors looks forward to your upcoming decision to nait this project. If you have any questions of this board please feel free to contact us anytime.


Sincerely,


Board of Directors
Carbon County Chamber Of Commerce

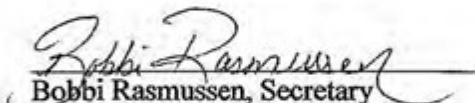
2010 Board of Governors:


Wayne Clausung, 2010 President
Sutherlands Lumber, Store Manager

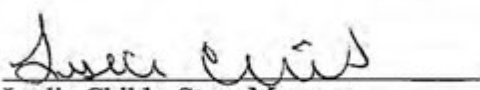

Viki Bowman, Treasurer

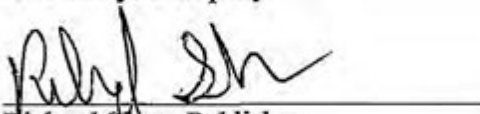

Erroll Holt, Immediate Past-President



Ethan Migliori, Vice-President
Small Busn. Development Ctr, Director

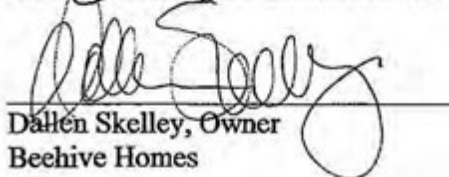

Bobbi Rasmussen, Secretary
Ziplocal/PDC Pages, Dist. Sales Mgr

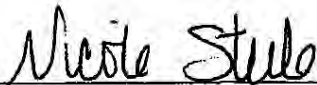
2010 Board Members:



Leslie Childs, Store Manager
JC Penneys Company

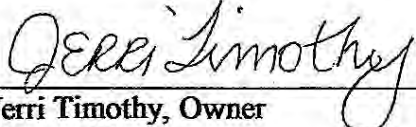

Richard Shaw, Publisher
Sun Advocate

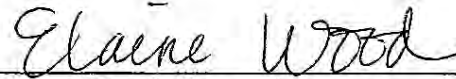

Al Shakespeare, Executive Director
Pinnacle Nursing/Rehabilitation Ctr.


Dallen Skelley, Owner
Beehive Homes


Nicole Steele, Workforce Dev. Specialist
Department of Workforce Services
Price Employment Center


Bill VandeSluis, Owner
Bill VandeSluis Photography


Jerri Timothy, Owner
Fitness World


Elaine Wood, Career Agent
Farm Bureau Financial Services

cc: Utah State Governor Gary Herbert
Utah State Lt. Gov. Greg Bell
U.S. Congressman Jim Matheson
U.S. Senator Orrin Hatch
Carbon County Commissioners
Helper City Mayor/Council
Wellington City Mayor/Council
Town of Scofield Mayor/Council
File

Utah State Senator David Hinkins
Utah State Rep. Christine Watkins
U.S. Senator Robert Bennett
Utah State Rep. Patrick Painter
Price City Mayor/Council
Sunnyside City Mayor/Council
East Carbon City Mayor/Council
Carbon County Chamber Members

22. CARBON COUNTY COMMISSIONER, WILLIAM D. KROMPEL



"Strength Through
Diversity"

May 17, 2010

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606-7317

via: email: narrowsDEIS@usbr.gov
and U.S. Mail

Michael Milovich
Commissioner
(435) 636-3272

Re: *Comments of Carbon County Commissioner William Krompel
Provided in Written Form during Public Hearing held in Price,
Utah on April 29, 2010 hosted by the United States Bureau of
Reclamation*

Dear Mr. Crookston:

William D. Krompel
Commissioner
(435) 636-3273

Apparently to qualify for millions of tax dollars in grants, the proposed Gooseberry Narrows Project is being touted by proponents to address, quote, "A shortage of recreation facilities near the project area and along the Wasatch Front" unquote. In truth, there is already an abundance of recreation facilities near the project area. The shortage, if this project is built, will be a water shortage in Fish Creek and Scofield Reservoir and for Carbon County's nearly 20,000 citizens that rely on this water supply. And during drought cycles, the fresh water shortages in Carbon County will intensify as will the frequency and duration. The droughts will become so severe that it is very likely there will be recurring states of emergencies in Carbon County.

John Jones
Commissioner
(435) 636-3271

To support my claims, consider these facts: Within a ten mile radius of the proposed Narrows Project site, recreationalists already have access to Electric Lake, Bolger Reservoir, Fairview Lakes, Gooseberry Lake, Upper and Lower Fish Creek – a Blue Ribbon Trout Stream – and Scofield Reservoir. Scofield is considered by the Division of Wildlife Resources to be one of the three most popular family fisheries in the state of Utah. Furthermore, if this recreation facilities shortage claim were really true, why would so many diverse state-wide groups, like fishing and recreation associations such as Trout Unlimited and Stonefly Society; conservation and environmental groups like Utah Rivers and the Sierra Club; the Southeastern Utah Association of Governments and industries like Rocky Mountain Power, Natural Gas and Coal companies all be opposed to this project? More specific analyses in the BOR's DEIS need to focus on the permanent negative impacts this project would have on Scofield's two State Parks, the Boy Scout Camp on the north shores of Scofield Reservoir and the devaluations of an estimated 400-500 recreational homes in the Scofield area. With all the recreation use, another

Carbon County 120 East Main Street • Price, Utah 84501 • (435) 636-3200 • Fax (435) 636-3210

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
Comments to Narrows Project SDEIS
May 17, 2010
Page 2

real shortage is the lack of restrooms around Scofield Reservoir. To my knowledge there is only a one-seat vault toilet and restrooms in the State Park for patrons. Carbon County Government pays on average \$30,000 per year to provide and service garbage dumpsters at Scofield Reservoir. I would encourage the BOR to provide additional restrooms at Scofield Reservoir.

- 22-1 One major reason for such state-wide opposition, not just Carbon County, to this Narrows Project is that it would create a permanent dewatering and devastating effect on Upper and Lower Fish Creek and Scofield Reservoir. With a network of over 68 miles of trans-mountain ditches and tunnels atop the Wasatch Plateau, for decades Sanpete water users have and are currently already diverting an estimated 10,000 to 20,000 acre-feet per year from Carbon and Emery Counties' natural drainages. Building a 17,000 acre-feet reservoir as proposed above Scofield at the headwaters of the Price River drainage to permanently capture and divert additional major fresh water away from Upper Fish Creek and Scofield would be the last, final straw to break the camel's back and put Scofield and all of Carbon County during drought years in serious ongoing fresh water crises. By county, Carbon is the largest producer of coal, second largest producer of natural gas and a major electrical power producer. Detailed economic analyses of the negative impacts of this project to Carbon and the state need to be included in BOR's EIS.
- 22-2

Another representation that proponents of the proposed Narrows Project have made to funding bodies like the Utah Legislature is quote, "We only want to store that water that is spilling over the spillway at Scofield every year that is of no use to either Carbon or Emery Counties." unquote.

I have a document that I will submit to the Bureau of Reclamation of the history of 63 years of water data at Scofield Reservoir from 1945 to 2007. Historically, Scofield only spilled less than 33% of the time, or 21 years of the 63 years represented. As a matter of fact, during one of Carbon County's drought years on June 19, 1991, Scofield Reservoir's maximum active storage was only 3,000 acre-feet out of a maximum storage of 65,800 – or less than 5% capacity. This amount of water represents only 10% of what Carbon water users actually use if available with valid water rights of 30,000 acre-feet per year.

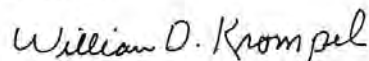
Even with several prior years of severe water restrictions in place during this drought, water levels at Scofield became so low that in the fall of 1991, Carbon County's Road Department personnel and heavy equipment were dispatched to dredge the reservoir so we would have enough water to meet the essential needs of our citizens.

Had the Gooseberry narrows Reservoir been in place during this time, Scofield Reservoir would have been completely out of usable water at least two years before the drought finally ended and

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
Comments to Narrows Project SDEIS
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Page 3

- 22-3** 20,000 citizen lives and property would have been put in jeopardy. In your Supplemental and DEIS, based on my review, this public safety and health concern is nowhere adequately addressed. It is my strong recommendation that it be addressed. I would also call your attention to 1961, another drought year where there were only 6,790 acre-feet of maximum active storage. Carbon County fared better during the last drought cycle which started in 2000 because of large quantities of water from the Skyline Mine were pumped into Eccles Creek which drained into Scofield. Without this mine water, the maximum active storage at Scofield on May 14, 2004 would have been more like 6,000 acre-feet, less than 10% capacity. Since 2000 the Skyline Mine water that flows into Scofield Reservoir ranges from over 16,000 acre feet per year to 6,500
- 22-4** acre feet per year. Even with these large quantities of additional Skyline Mine water Scofield Reservoir has not spilled from 2000 to present. This mine water will no longer be available once mining operations cease. The BOR's DEIS needs to take this temporary phenomenon of additional mine water into account.
- 22-5** Another extremely important point to consider: The over-allocation of water rights by the State needs also to be examined in the DEIS. Some U.S. Forest Service officials claim water rights on some rivers and streams in Utah are over allocated by a factor of 2 or 3 times the available water. In this case, this project if built would virtually guarantee North Sanpete water users 100% of their 5,400 acre-feet of yearly water allocations - even during drought cycles. Yet, Carbon water users, with equally valid water rights, could expect in many year, only fractional parts - 50%, 25%, or less - of their yearly water allocations.

Sincerely,



William D. Krompel
Carbon County Commissioner

WDK/sl

SCOFIELD RESERVOIR
YEARLY MAXIMUM ACTIVE STORAGE
MAXIMUM ACTIVE STORAGE 65,800 ACRE-FEET

Year	Spilled		Max. AF	Max. Storage Date
	No	Yes		
2007	X		41,969	5-19
2006	X		54,519	6-9
2005	X		60,233	6-27
2004	X		23,578	5-14
2003	X		34,994	6-2
2002	X		34,994	5-7
2001	X		47,763	5-21
2000	X		54,295	5-14
1999		X	70,619	6-13
1998		X	70,719	6-17
1997		X	71,484	6-8
1996	X		43,960	6-17
1995	X		62,195	6-22
1994	X		41,721	5-19
1993	X		55,900	6-20
1992	X		13,880	4-21
1991	X		3,000	6-19
1990	X		22,130	6-1
1989	X		37,352	5-17
1988	X		56,972	5-27
1987	X		61,607	5-31
1986		X	73,223	5-31
1985		X	70,619	5-23
1984		X	72,920+	5-27
1983		X	72,930+	6-4
1982		X	72,930+	6-1
1981	X		55,630	6-1
1980		X	71,770	6-6
1979		X	69,190	6-8
1978	X		63,820	6-20
1977	X		26,943	6-4
1976	X		61,607	5-26
1975		X	71,200	6-19
1974		X	66,910	6-4
1973		X	70,910	6-15
1972	X		53,499	5-21
1971		X	69,760	6-1
1970		X	69,470	6-1

**POTENTIAL ADVERSE IMPACTS TO CARBON COUNTY AND THE STATE OF UTAH FROM
SANPETE COUNTY'S PROPOSED GOOSEBERRY NARROWS DAM & RESERVOIR PROJECT**

BACKGROUND

- Sanpete County is presently using some 69 miles of ditches, tunnels and the Fairview Reservoirs on the Wasatch Mountain tops to divert an estimated 10,000-20,000 acre feet of water per year from Emery and Carbon Counties.
- On Carbon County's side, Sanpete's main trans-mountain diversion is through the Fairview tunnel. The Cottonwood Gooseberry Irrigation Company, a private company, uses this tunnel to divert annually 3,020 acre feet of water it owns. However, a gauge on this tunnel shows in 1993 a diversion of 4,474 acre feet. **Fairview Lake's capacity 3,000 acre feet serves as a water storage reservoir for the Cottonwood Irrigators of Sanpete County.**
- Sanpete Water Conservancy District, per a 1984 legal agreement, secured an additional water right of 5,400 acre feet per year. However, none of the 5,400 acre feet has been put to beneficial use by Sanpete Water District since 1984.
- Based on this 5,400 acre/feet water right that has not been put to beneficial use for twenty-four years, Sanpete Water Conservancy District proposes to build a 17,000 acre foot reservoir above Scofield Reservoir located on the Fish Creek drainage. Fish Creek is the major water source for Scofield Reservoir. The project would require relocation of Highway 264 going from Flat Canyon to Skyline Drive. The 5,400 acre feet would then be diverted through the Fairview Tunnel.
- The Project would **only benefit North Sanpete County**. Approximately 89% of the water would be used by 250 farmers in North Sanpete to grow an additional crop of alfalfa.
- Total cost for the project could **easily exceed \$50 million** because of the extensive mitigation for losses of wetlands, decreased flows in the Fish Creek drainage which would damage or destroy more than 20 miles of rainbow and cutthroat trout spawning habitat, and degradations to Scofield Reservoir, the State's second most popular fishery. Inflows to Scofield would decrease by 20% during an average year and by as much as 50% during drought years.
- **Because the project is so expensive, Sanpete is seeking subsidies from Federal and State tax dollars. Sanpete is already the most heavily subsidized county in Utah.** They receive \$4.38 in state benefits for every \$1.00 they pay in state taxes. Carbon receives \$1.44 and Emery receives \$1.51. The Utah Foundation analysis did not take into account mineral lease royalties and severance taxes that are paid by coal mining and gas wells in Carbon and Emery. Sanpete has no coal mines or gas wells.

ENERGY AND INDUSTRIAL CONCERNS

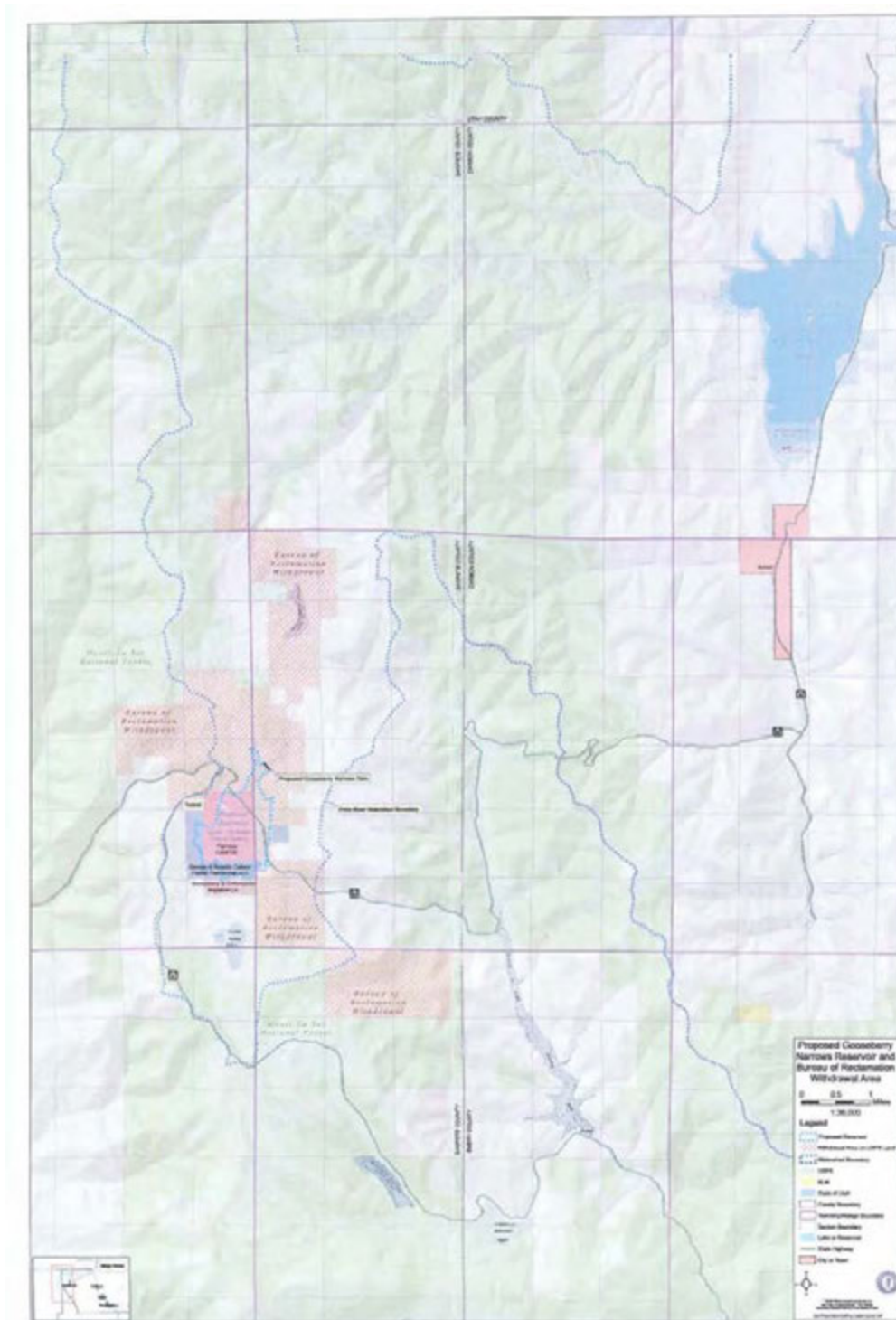
- Because of recurring droughts, Utah Power may be looking for relief from rate payers for the \$5 million they have spent on water leases this year and an additional several million dollars to install and operate water wells. Subsidizing the construction of a 17,000 acre feet reservoir to divert more water away from Carbon County will adversely affect the Utah Power's Carbon Plant at Castle Gate and possibly cause shut downs during drought cycles.
- If the Gooseberry Narrows Reservoir is constructed, Arch Coal/Skyline Mine Operation may not proceed under Flat Canyon. There are 50 million tons of recoverable coal in this area which will be lost along with miners' jobs. 173 of the 250 miners employed at Skyline are from Sanpete County. Sanpete will also lose the mineral lease royalties and property tax from recovery of the Flat Canyon Coal.
- Over the last decade, Carbon County has risen in prominence in natural gas production to currently number two by county. Carbon County is also in the top three by county in coal production. Each of these energy industries, like the Power Plants, require reliable supplies of fresh water. Diverting substantially more fresh water away from Carbon County during drought cycles could place all three energy industries in jeopardy with state-wide economic implications for rate payers.

PUBLIC SAFETY AND HEALTH CONCERNS

- During the last year of the drought cycle of 1988-1992, water levels at Scofield Reservoir became so low that Carbon County Road Department's heavy equipment were dispatched to Scofield to dredge the reservoir so that we would have enough water for drinking and meeting the sanitary needs of the County's families. Had the Gooseberry Narrows Reservoir been in place during that time, Scofield Reservoir would have been ***completely out of useable water a year or two before the drought finally ended***, and 20,000 citizens lives and property would have been put in jeopardy so 250 farmers in North Sanpete could grow an additional crop of alfalfa.
- According to fire chiefs from Helper, Price and Wellington, during drought conditions in the past, there have been numerous times that their storage tanks have been low enough that if a major fire had developed there would not have been sufficient water to protect our communities.

CONCLUSIONS

- Both Emery and Carbon County Commissions support accurate gauging, monitoring and automating of Sanpete's extensive trans-mountain diversion tunnels and canals. For example, in 1993 Sanpete's Cottonwood Gooseberry Irrigation Company diverted nearly 1,500 more acre feet of water through the Fairview Tunnel than legally entitled. Emery's water conservancy district's automated on-line water monitoring program at www.ewcd.org is a good model to follow.
- Apparent over-allocation of water rights on various water sources needs to be examined by appropriate regulatory agencies. U.S. Forest Service officials claim water rights on some rivers and streams in Utah are over allocated by a factor of 2 or 3 times the available water.
- Subsidizing Sanpete's proposed Gooseberry Narrows Project with millions of Federal and State tax dollars is ethically, environmentally and economically wrong. The project is too costly, controversial, benefits too few, and hurts too many.



23. CENTERFIELD CITY, THOMAS SORENSEN, MAYOR

Crookston, Peter L

ORIGINAL

From: Michael Cannell [mcannell@cvmed.net]
Sent: Monday, May 24, 2010 7:18 PM
To: PRO NarrowsEIS
Subject: SANPETE COUNTY NEEDS NARROWS PROJECT

- 23-1 TO WHOM IT MAY CONCERN, SANPETE COUNTY HAS BEEN PROMISED THIS WATER STORAGE FACILITY FOR MORE THAN 80 YEARS. I AM IN THE MEDICAL PROFESSION BY TRADE AND OWN AND RUN A SMALL FARM ON THE SIDE, EVERY YEAR WE RUN LOW ON WATER TO IRRIGATE OUR CROPS AND WE HAVE TO RATION OUR WATER FOR OUR LAWNS. WE NEED A STORAGE FACILITY TO KEEP OUR WATER AND IT IS OUR WATER, SO THAT WE CAN USE IT IN THE FALL WHEN WE NEED IT THE MOST. IT WOULD ALSO BE NICE TO HAVE A PLACE TO RECREATE. PLEASE DON'T EXCLUDE US FROM WHAT IS RIGHT FULLY OURS.

THANK YOU
THOMAS SORENSEN MAYOR OF CENTERFIELD CITY
PO BOX 220655
CENTERFIELD UT 84622
PHONE 435-528-3598

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JUN 04 '10

Date	Code	Code
6/2/10	100	
6/2/10	105	
6/2/10	107	
6/2/10	700	
6/2/10	770	
6/2/10	7740	

ENVI-10.00
Narrows
10040342
1122816

24. EPHRAIM CITY MANAGER, RICHARD ANDERSON

Wed 7/28/2010 11:27 AM

- 24-1 Thank you for reminding me of the need to have a letter to accompany the Ephraim City Council Resolution on the Narrows' Project. The Resolution reflects the feelings of the Ephraim Mayor and Council, who as elected officials, officially represent the 5000 people within Ephraim.

The project study has been reviewed and discussed and the following key points are the basis of the Resolution:

1. It is time for a decision.....this has been under consideration too long.
2. Historically it has been determined the water rights are owned by Sanpete County. This should carry considerable weight in the decision.
3. Concessions and projects (i.e. Scofield enlargement) have already been made to mitigate the impact to Carbon County.
4. The environmental impacts of the project are not insurmountable and can be mitigated or eliminated. In fact, the positive environmental benefits greatly outweigh the negatives. Consistent stream flows are simply one example.
5. The economic impact to Sanpete County is substantial through increased agriculture, recreation and tourism. Negative impact to Carbon County in these same areas would be negligible.

In summary, in our opinion the single two largest reasons the Narrows Project should be allowed are: 1. Sanpete County holds the water right 2. The environmental impacts of the project can be mitigated.

Thank you,

RICHARD ANDERSON

Ephraim City

City Manager

phone: 435-283-4631

fax: 435-283-4867

<mailto:richard.anderson@ephraimcity.org>

25. EPHRAIM CITY PLANNING DIRECTOR, BRYAN KIMBALL

Sat 5/29/2010 11:45 PM

May 27, 2010

Regarding the proposed Narrows Reservoir Project in Sanpete County, UT:

25-1 I am the appointed Planning Director and City Engineer for the City of Ephraim, in Sanpete County, UT. I am a licensed professional civil engineer (PE) in the State of Utah and a nationally certified planner (AICP) of the American Planning Association. My formal training includes undergraduate and graduate degrees in Civil Engineering from Utah State University. As you may guess, much of my job is literally to plan for the long term future of our community, in a way that is sustainable and responsible so that future generations can enjoy the same benefits that we do. I want to emphasize that my comments here represent my own personal opinion and should not be construed as to represent the formal opinion of the City of Ephraim.

I am in favor of and strongly support the proposed Narrows Reservoir Project. I feel that the benefits of this project far outweigh any potential negative aspects of this project, and that those benefits will extend beyond the immediate area of the project itself, even spilling into surrounding counties and other communities which have nothing to do with this project. I base my opinion on the following key points:

- **This project will provide vital water resources for municipal and agricultural uses in Sanpete County and beyond.** Sanpete County has limited water resources in terms of water storage, especially in the northern parts of the county. The available water is limited to surface runoff from the snowmelt, and whatever storage is available in underground aquifers. Once the water runs past the farms and towns after the snow melts, Sanpete County is essentially out of water until the next snowmelt season. Under the "do nothing" alternative, more and more demand will be placed on the available water supply, eventually tapping the underground reservoirs beyond their ability to replenish themselves from the snow melt. With water being *the* limiting resource in this area, it only makes good planning sense to provide the ability to store and utilize the water such that what water does come our way can be used year round rather than just during the snow melt runoff season, and do it in a way that preserves rather than diminishes our underground storage aquifers. Additionally, any water not used directly by Sanpete County will benefit those communities downstream in a similar manner.
- **This project will provide economic benefit to the County, in the form of jobs created and increased tourism and recreational opportunities, as well as increased agricultural output.** The jobs created from this project extend far beyond just the immediate construction and long term maintenance of the reservoir itself. Agriculture is the backbone of the economy in Sanpete County. Being that this project will enable water use nearly year round, this has huge implications for the agricultural community which will be able to sustain more productive crops for longer periods of time during the growing season, creating dollars that will turn over again and again as that increased production

ripples through not only the local economy but also anyone else that touches these agricultural products in neighboring counties and beyond. Dollars created from recreational and tourism will also turn over through many different industries, from restaurants, to stores, to hotels, to recreational sales, etc. Much of the dollars will stay in Sanpete County. This will be a great economic asset to a county which has historically served as one of more economically depressed areas in the state. At least a portion of the economic benefits will extend beyond the borders of this County. Furthermore, there is a growing need to see that any remaining farm and agricultural land be used more efficiently, as farm land is disappearing quickly across the country due to development pressures. This project will enable Sanpete County, one of the top producing agricultural counties in the state, to be more efficient and productive in its agricultural productions.

Some have raised the question of cost for this project, saying it will cost too much money. What they fail to acknowledge is that this project would have cost far less money had it been allowed to be constructed when it was first proposed. The County has spent hundreds of thousands of dollars to perform additional studies, all of which have been met and which ultimately support the initial findings. Additionally, water is something that will be needed in much more demand as the state continues to grow. There will be a much greater need to be able to store the peak runoff water that comes from the snow melt to be able to use it later in the season. Ultimately, the development and use of water will only become more expensive as time goes on. Delaying this project further will only cause to increase the cost.

- **This project is environmentally friendly.** There will be some direct environmental impact created by this project, especially to the immediate area surrounding the reservoir. However, there are mitigation measures outlined as part of the project which will address much of this immediate impact, and there is little ecologically speaking in the area of this project that cannot adjust over time through mitigation measures and other natural means to the presence of a large body of water and still thrive. On the contrary, such a body of water may seek to diversify and allow for more and/or additional wildlife than what exists currently. The presence of water bodies is generally seen as a benefit to wildlife and the overall ecology, as demonstrated by the EPA's strong focus on preserving wetlands and other water related areas across the state and country.

In the larger sense, this project will create a renewable water source which requires little to no pumping, and therefore no energy costs or carbon footprint associated with that pumping. Additionally, the presence of the reservoir will help to replenish the underground water supply as water percolates into the ground. This cannot be said of the "do nothing" option, as increasing demand will eventually drive more and more pumping of underground aquifers, thus increasing the carbon foot print of the entire area downstream and depleting the aquifers beyond their ability to replenish themselves. Additionally, the presence of a consistent flow of water which is available for much of the year allows for other opportunities such as the development of hydro-electric power generation in future projects. As the debate on fossil fuels heats up and those resources are expended, there is ever more need to find alternative sources of energy - especially ones that are "green", renewable and relatively inexpensive. This project will help to do its part towards a more sustainable society.

- **This project will fulfill obligations and promises made to Sanpete County which in some cases are multiple decades old.** History has shown that most of the objections raised over this project have originated in Carbon County. It is my opinion that virtually all arguments made by anyone opposing this project stem from the fundamental argument of who really has the right to use the water. This particular issue has been addressed numerous times by multiple studies and jurisdictional bodies, including the State Water Engineer, the Supreme Court, and the Department of Justice which have all ruled in Sanpete County's favor. They all agree that the water is Sanpete's water, and although previously "temporarily" used by Carbon County for a number of years, the original right to the water of Sanpete County has not changed. Formal third party studies have also confirmed the rights and benefits of this project. Carbon County itself has formally acknowledged, in writing, on at least two separate occasions that it would no longer oppose this project based on agreements and compromises made, which included provisions such as maintaining minimum flows into the Scofield Reservoir (US Dept. of Justice , 1989). Additionally, due in part to the negotiations for the water, Carbon County received approval for a significant expansion of their Scofield reservoir, yet Sanpete County has yet to see the other side of those original negotiations intended to benefit Sanpete County.

The promises and mutual agreements made to Sanpete County nearly 80 years ago by the Federal Government predate almost all existing laws relating to environmental impact, etc. In terms of local land use, in the State of Utah it is essentially illegal for me as an agent of a local government entity to "change the rules" on an applicant once that applicant has submitted a valid application or petition for a given project. In essence that applicant becomes bound to follow those rules in place at the time of the original application, or "grandfathered" to those original rules, and cannot be forced to comply with any new rules enacted after that time. Yet Sanpete County has, since the original agreements were made, provided significant time, effort, and money into "jumping through the hoops" which have all been set up as "requirements" since that time of initial application in terms of environmental studies and other federal mandates and restrictions. The County has met all the requirements. It is now time for the federal government to live up to the promises made decades ago to the County and see to it that this project moves forward.

- **The proposed project will add to the scenic beauty of the area.** This project will add significant beauty and aesthetically pleasing amenities to the area. It will encourage people to actively participate in the outdoors, and will provide a place of open space and recreational enjoyment for generations to come.
- **The proposed alternative is the best alternative.** The proposed alternative, simply put, provides the most benefit and the least negative effects of any of the alternatives presented in the EIS, including the "do nothing" alternative. It provides the best and most sustainable long term solution; it provides the most economical benefit, with the least environmental impact. Multiple independent studies and reports have made similar findings.
- **The proposed project has the full support of the State of Utah.** Recent legislation passed by the State of Utah expressed full support of the project. Additional support has been expressed by state

representatives, including Congressman Jason Chafetz. There really is no need to delay this project any further.

In conclusion, I feel there is ample reason to support this project, and very little rationally based reason to oppose it which has not already been addressed previously. The benefits far outweigh the costs. It makes good planning sense. It makes good engineering sense, on a multitude of different levels. There is broad support for this project across Sanpete County, and beyond (State of Utah, Representative Chavetz). I encourage you to do whatever is in your power to see that this project comes to fruition without any further delays.

Thank you for your time.

Bryan Kimball, P.E., AICP

Resident of Ephraim City and Sanpete County

26. EPHRAIM CITY, MAYOR, DAVID PARRISH

Tue 5/1/2010 9:00 AM

Leigh Ann Warnock, CMC

Ephraim City

City Recorder

5 South Main

Ephraim, Utah 84627

(435) 283-4631

(435) 283-4867 (Fax)

EPHRAIM CITY RESOLUTION ECR 10-09

NARROWS PROJECT

26-1 A RESOLUTION SUPPORTING THE PROPOSED GOOSEBERRY NARROWS WATER STORAGE PROJECT

WHEREAS, Ephraim City is located within the Sanpete Water Conservancy District; and

WHEREAS, a plan has been proposed to construct a water storage reservoir in northern Sanpete County; and

WHEREAS, the Sanpete Water Conservancy District owns the rights to the water; and,

WHEREAS, Ephraim City recognizes the need for future storage of water within our drainage basin; and

THEREFORE, The City Council of Ephraim does hereby support and recommend for approval and construction the Gooseberry Narrows Reservoir as proposed by the Sanpete Water Conservancy District.

APPROVED, PASSED, and ADOPTED this 19th day of May, 2010.

EPHRAIM CITY

David Parrish, Mayor

ATTEST

Leigh Ann Warnock, Recorder

COUNCIL VOTE

Kim Cragun	Aye ____ Nay ____
Greg Dart	Aye ____ Nay ____
Richard Squire	Aye ____ Nay ____
Don Olson	Aye ____ Nay ____
Terry Lund	Aye ____ Nay ____

27. FAIRVIEW CITY, MAYOR BENSON

AL

ORIGINAL

Crookston, Peter L

From: Jonathan E. Benson [benson@cut.net]
Sent: Tuesday, May 25, 2010 3:25 PM
To: PRO NarrowsEIS
Subject: Narrows Project

Peter Crookston

- 27-1 I want to keep my remarks brief. I want to express my support for the Narrows Project. As you are well aware this battle has been going on for years and it is time to do for Sanpete County what has been promised and what has been agreed to.

Sanpete clearly owns the water rights Carbon County is currently using.

Sanpete has very little water storage, especially when compared to Carbon and Emery county.

Without water storage we have no room to grow. It is my belief that before long the "Wasatch Front" will soon be right here in Fairview! As a mayor this concerns me a great deal.

This project will have great economic impact for Sanpete County both in jobs and recreational activities.

We are not asking for much, but I do ask that we received what has been promised and reconized as Sanpete County's, and put a stop to Carbon County's grumbling and lies over something that is not theirs.

Thank you
Mayor Benson
Fairview City

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Reply Date	Reply	Code
	[Signature]	100
	[Signature]	105
	[Signature]	107
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6/21/10	[Signature]	770
6/21/10	[Signature]	774a

Action: ENV-10.00
Location: Narrows
Project: 10040382
ID: 1122516

28. FAIRVIEW CITY, TREASURER, KAMMY TUCKER

Fri 5/28/2010 3:01 PM

To Whom it my concern:

28-1 *I feel when you are promised something people should back what they promise.*

This has been a long ways in the making and needs to go further.

I can't express how much good this project could do for the Sanpete Communities and how many could benefit. Why would we not want what is best for all and do what was promised almost a decade ago.

Please consider my letter has a plea to go forward with the project, keep what was promised.

Thank you,

Kammy Tucker

Treasurer

Fairview City

435-427-3858

kammyt@cut.net

29. GUNNISON CITY, LARRY JENSEN, CITY COUNCIL MEMBER

42



ORIGINAL Gunnison City Corp.

34 East 100 North
P.O. Box 790
Gunnison, Utah 84634-0790
Phone (435) 528-7969

Fax (435) 528-7958

Mayor Lori Nay
Council Members:
Steven Buchanan
Brian Jensen
Larry K. Jensen
Jeremy Pickett
Trevor Powell

May 28, 2010

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606

Re: Narrows Project

- 29-1 As a City Council Member for Gunnison City, I would like to voice my support for the Narrows Project in Sanpete County.

The Utah Supreme Court and the US Department of Justice have both acknowledged Sanpete's ownership of the water rights involved. Over 70 years ago, these promises were made to Sanpete County by the Federal government. It is time to pay the fiddler and make right on these promises. Sanpete County needs this water to maintain our agriculture economy in this County. Water supply is so critical for our County. This water has been proven to be ours-why shouldn't we be able to use it? Further more, with Sanpete County being one of the poorest Counties in the State of Utah, our County needs the economic stimulation this Project would bring to our communities within the County. We are responsible stewards, and good care takers of our land and land around us. The impact this Project could make on our County far out weighs any issues offered by opponents of this Project.

Where is the integrity and fundamental fairness that this great Nation is built upon? In 1984, Carbon County agreed, in writing, the narrows Project should be built. Carbon County needs to honor its commitments, and it is the responsibility of Reclamation to be sure this is completed.

Sincerely,

Larry Jensen
265 North 200 West
Gunnison, UT 84634
435-528-3759

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Reply Date:	Initials	Code
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Classification: F-112-1215		
Project: NARROWS		
Control No: 1000001		
Folder ID: 1122816		

30. GUNNISON CITY, STEVEN BUCHANAN, CITY COUNCIL MEMBER

77L



ORIGINAL Gunnison City Corp.

34 East 100 North
P.O. Box 790
Gunnison, Utah 84634-0790
Phone (435) 528-7969

Fax (435) 528-7958

Mayor Lori Nay
Council Members:
Steven Buchanan
Brian Jensen
Larry K. Jensen
Jeremy Pickett
Trevor Powell

May 28, 2010

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606

Re: Narrows Project

- 30-1 It is my strong opinion, the Narrows Project of Sanpete County needs to be completed as promised by the Federal government close to 80 years ago. As a Council Member of Gunnison City, I have a great interest in this Project for the future of Sanpete County.

It is so important to our County we receive the water that is rightfully ours. This would have a favorable job impact in our County, along with the critical issue of water in our County. We are an agricultural County, and it is vital our farmers and citizens receive this water to sustain life in our County. This water is clearly owned by Sanpete County, why should we have to fight for what is already ours? Reclamation needs to make this right and be sure Carbon County follows through with their commitment of the 1984 Compromise Agreement.

Sincerely,

Steven Buchanan
P.O. Box 802
Gunnison, UT 84634
435-528-3434

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Action:		
Classification: EX-10-100		
Project: V. Narrows		
Council No: 10040277		
Date: 11-2-8/10		

31. GUNNISON CITY, TREVOR POWELL, CITY COUNCIL MEMBER

HL



ORIGINAL
Gunnison City Corp.

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Gunnison, Utah 84634-0790
Phone (435) 528-7969
Fax (435) 528-7958

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Mayor Lori Nay
Council Members:
Steven Buchanan
Brian Jensen
Larry K. Jensen
Jeremy Pickett

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6/21/10	PC	774cy

May 28, 2010

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606

Re: Narrows Project

- 31-1 As a City Council Member for Gunnison City, it is my opinion, it is of great importance the Narrows Project to finished in Sanpete County.

As Vice Principal of Gunnison High School, I see the younger generation grow and hope to earn a living in this County as they grow up just like their parents. Because of the increased usage of water in our area, it is vital we take care of our future, and prepare now.

The Utah Supreme Court and the US Department of Justice have both acknowledged Sanpete's ownership of the water rights involved. Over 70 years ago, these promises were made to Sanpete County by the Federal government. It is time to pay the fiddler and make right on these promises. Sanpete County needs this water to maintain our agriculture economy in this County. Water supply is so critical for our County. This water has been proven to be ours-why shouldn't we be able to use it? Further more, with Sanpete County being one of the poorest Counties in the State of Utah, our County needs the economic stimulation this Project would bring to our communities within the County. The impact this Project could make on our County far out weighs any issues offered by opponents of this Project.

Where is the integrity and fundamental fairness that this great Nation is built upon? In 1984, Carbon County agreed, in writing, the narrows Project should be built. Carbon County needs to honor its commitments, and it is the responsibility of Reclamation to be sure this is completed.

Sincerely,

Trevor Powell
349 East 100 North
Gunnison, UT 84634
435-528-3905

32. GUNNISON CITY, LORI NAY, MAYOR



ORIGINAL

Gunnison City Corp.

34 East 100 North
P.O. Box 790
Gunnison, Utah 84634-0790
Phone (435) 528-7969

Fax (435) 528-7958

Mayor Lori Nay
Council Members:
Steven Buchanan
Brian Jensen
Larry K. Jensen
Jeremy Pickett
Trevor Powell

May 28, 2010

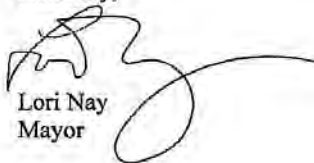
Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606

- 32-1 As Mayor of Gunnison City, I would like to voice my strong support for the Narrows Project in Sanpete County. This Project is extremely vital for our water supply in Sanpete County.

The Utah Supreme Court and the US Department of Justice have both acknowledged Sanpete's ownership of the water rights involved. This Narrows Project was first discussed in the 1930's, with Carbon County receiving their end of the bargain over 50 years ago. Sanpete County to this date has not received any of the water storage that was promised. Where is it? Further more, with Sanpete County being one of the poorest Counties in the State of Utah, our County needs the economic stimulation this Project would bring to our communities within the County. We are responsible stewards, and good care takers of our land and land around us. The impact this Project could make on our County far out weighs any issues offered by opponents of this Project.

Where is the integrity and fundamental fairness that this great Nation is built upon? In 1984, Carbon County agreed, in writing, the narrows Project should be built. Carbon County needs to honor its commitments, and it is the responsibility of Reclamation to be sure this comes to pass. The Narrows Project is important to Sanpete County and as Mayor, I wish to express my support for the project and ask for your consideration.

Sincerely,


Lori Nay
Mayor

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Class: ENV-6.00
Project: Narrows
Contract No: 10033017
Date: 11/2/816

Bureau of Reclamation
ATTN: Peter Crookston, PRO-774
Gooseberry/Narrow SDEIS Comments
May 27, 2010
Page 2

present will continue to be released into the reservoir. With diminished levels of water, there will be less of a dilution factor resulting in a concentrating effect. This will, in turn, promote a significant increase in algal growth because of nutrient enrichment that then will result in greater levels of dissolved organics as the life cycle of the algae will promote greater amounts of algae die-off resulting in lowered levels of dissolved oxygen. Lower levels of dissolved oxygen will promote the growth of Blue-Green algae which directly may effect the health of downstream users and which will negatively impact the ability of fish to survive in the reservoir and require additional water treatment efforts resulting in higher costs. Second, the rise in dissolved organics and Total Organic Carbon (TOCs) from additional algal growth will have a direct correlation to the formation of disinfection by-products, Tri-halomethanes (TTHMs), and Haloacetic Acids (HAA5s). We have developed a history of testing for these components in the treatment and distribution systems and have determined that when water levels are low, especially consistently low, and the temperature of the water increases, the formation of these components increases significantly. The Utah Division of Drinking Water and U.S. Environmental Protection Agency have determined that TTHMs and HAA5s must be prevented from forming because of the threat to human health as these have been categorized as carcinogenic. Additional treatment requirements to remove dissolved organics or TOCs in the raw water, or to remove TTHMs and HAA5s that form in the distribution system can be cost prohibitive. The best way to prevent the formation of these compounds is to take steps to prevent the release of dissolved organics in the raw water.

It is expected that the proposed Gooseberry/Narrows Dam will:

1. Negatively affect the quality of the water coming from Scofield Reservoir.
2. Negatively affect the fishery coming into, in, and leaving the reservoir.
3. Negatively affect the ability of the Price River Water Improvement District to effectively treat and distribute safe and healthy drinking water to its users.

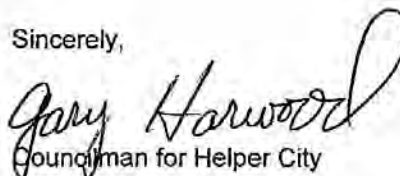
Bureau of Reclamation
ATTN: Peter Crookston, PRO-774
Gooseberry/Narrow SDEIS Comments
May 27, 2010
Page 3

4. Negatively impact the District's ability to meet the existing needs of its users during drought cycles.
5. Potentially affect the health of the District's culinary water users.
6. Raise the treatment costs for culinary water to the District's users."

For the reasons stated, Helper City opposes the proposed construction of the Gooseberry/Narrows dam.

Thank you for your consideration of our concerns.

Sincerely,


Councilman for Helper City

34. MANTI CITY, NATASHA MADSEN, MAYOR**RESOLUTION**

34-1 WHEREAS, Manti City is very aware of the importance of water to our country, state and the citizens and to the economy of Sanpete County and . . .

WHEREAS, the Bureau of Reclamation had completed a supplemental draft environment impact study regarding the Narrows project and has requested public comment regarding the study and the project and . . .

WHEREAS, the completion of the Narrows project will provide not only water for human consumption but for agricultural use and will also provide an outstanding recreational opportunity along with water control features . . .

NOW THEREFORE, the Manti City Council, by unanimous vote at the council meeting of May 19, 2010 fully endorsed completion of the Narrows project as committed to over 80 years ago and respectfully request the favorable action to that end by the Bureau of Reclamation. Recognizing that such action will be to the benefit of not only over 3,000 individuals in Manti City but will prove beneficial to all citizens.

Adopted this 19th day of May 2010 by motion of Councilmember Alan Justesen seconded by Councilmember Vaun Mickelsen.

Councilmembers voting "aye":

Alan Justesen

Vaun Mickelsen

Galen Christiansen

Korry Soper

Loren Thompson

Councilmembers voting "nay":

None

Signed by Natasha R Madsen, Mayor of Manti City this 19th day of May 2010.

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Reply Date	Date	Initials	Code
7/28	7/28	WSD	100
		WSD	105
		WSD	107
		WSD	100
6/4/10	6/4/10	WSD	770
		WSD	774

Action: ENAV - 6.00
 Classification: NARRROWS
 Project: 10034920
 County: 1122810

35. MT. PLEASANT CITY, SALLY EAST, CITY ADMINISTRATOR

Fri 5/7/2010 2:51 PM

35-1 My name is Sally East I'm the City Administrator for Mt. Pleasant City. We are always short of water in the City. We have pressurized irrigation and I know this would not help that system but it would help the culinary system.

There are an increasing number of people who do not have access to irrigation and so must water their yards and gardens with culinary water. In the summer the tanks are quickly drained by this usage.

I also fish at Scofield and Electric Lake there are a large number of people who use those areas all the time another lake with fishing and recreation would be a great idea to serve the citizens of the area as well as the hundreds of people who come from Utah & Salt Lake Counties. I don't believe that the water level in Schfield will be negatively impacted it was enlarged to hold this water that should never have been put in that lake for storage it belongs to the Sanpete side of the world. Carbon has had use of it for many years it is time for the water to be sent where it was supposed to be. The farmers in Indianola and the rest of the North Sanpete area run out of water and are unable to grow their crops most years by the middle of summer they are out of water. Please allow the water to be sent to the Sanpete side of the mountain where it is supposed to be.

Thanks

Sincerely,

Sally East
805 E 100 S
Mt. Pleasant, Ut 84647

36. MT. PLEASANT CITY, SANDRA S. BIGLER, MAYOR; JUSTIN ATKINSON, COUNCILMAN; MONTE BONA, COUNCILMAN; MICHAEL HAFEN, COUNCILMAN; COLEEN OLTROGGE, COUNCILWOMAN; REED THOMAS, COUNCILMAN

ORIGINAL COPY

PLEASANT

115 West Main Street, Mt. Pleasant, UT, 84647, 435-462-2456, (Fax) 462-2581

May 20, 2010

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, Ut 84606

Dear Mr. Crookston:

36-1 This letter is written in behalf of Mt. Pleasant City and its citizens. We the Mayor and City Council serve these citizens and are concerned for their welfare and water needs.

The Reclamation's SDEIS document points out that the Narrows Project was formulated more than 70 years ago. Sanpete County's need for water storage--for both residential and agricultural use--is greater now than it was then. Once the snow pack has melted or in other words "high water" is gone Sanpete is out of water for the year.

The figures suggested by the President's Counsel of Economic Advisors, and the Center for Strategic Economic Research, draw a clear conclusion: Building the Narrows will have a very favorable economic impact on Sanpete. It will mean jobs for the people of Sanpete, and increased revenue for the local businesses. The economic in Sanpete is struggling and the economic help is needed very badly.

In 1984 Carbon County agreed, in writing, that the Narrows Project should be build (see the 1984 Compromise Agreement). Reclamation should push to see that Carbon honors its commitments.

The new recreation facilities will also bring additional economic benefits to Sanpete and surrounding counties. As people travel to reach the Narrows recreation facilities, the communities on their route will benefit from these travelers. The purchases of fuel, food and lodging will be significant to the businesses of Sanpete and surrounding areas.

The Narrows Project will have a favorable effect on tax rates in Sanpete County. As additional jobs are created and more economic activity takes place, a portion of the revenues will flow into tax coffers. This increase flow of money will help to hold down tax rates.

The federal government continues to spend money on projects that are not necessary to serve people and the continued need for additional water resources, for example the Utah

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MAY 23 '10

Reply Date		
Date	Initials	Code
		100
		105
		107
		700
		770
		774

ENV-6.00
NARROWS
10037348
1122816

Mayor: Sandra S. Bigler **Recorder:** Sally East **Treasurer:** David Oxman **Police Chief:** Jim Wilberg
Judge: Ivo Peterson **Council:** Justin Atkinson, Monte Bona, Michael Hafen, Reed Thomas, Coleen Oltrogge
mtpleasantcity.com

Lake project, where over \$40 million has been spent to protect the June Sucker. The entire Narrows Project will cost less than \$40 million and the cost can be recouped from the sale of the stored water. Which is most important saving a fish or providing for the water needs of people?

The various wildlife species mentioned in the SDEIS are important, but storing water to enable Sanpete farmers to raise crops and have culinary water for citizens is more important. There is evidence that the wildlife species will relocate and grow some place else.

Sanpete County has invested a lot of money over the years to study various sites for the Narrows Project. The current proposed site is the most ideal, would cost the least to construct the dam, would require no pumping costs to get the stored water to the end users, and be the least costly to maintain. The project should be built where it currently being proposed.

Sanpete has had to learn over the years to be careful with the precious water that it receives. Independent study shows that Sanpete County is a leader in water conservation measures.


Please make every effort to see that the water in the Narrow Project is delivered to the citizens of Sanpete County, where it belongs.

Sincerely,



Sandra S. Bigler, Mayor Mt. Pleasant City

Justin Atkinson, Councilman

Monte Bona, Councilman, 

Michael Hafen, Councilman

Coleen Oltrogge, Councilwoman

Reed Thomas, Councilman



37. PRICE CITY, GARRY SONNTAG, PUBLIC WORKS DIRECTOR

Mayor
JOE L. PICCOLO
City Attorney
NICK SAMPINOS
**Human Resource &
Risk Management Director**
JOHN DANIELS
Public Works Director
GARY D. SONNTAG, P.E.
City Engineer
RUSSELL L. SEELEY, P.E.
Building Inspection
ROBERT BENNETT
Streets & Fleet Supervisor
J. SCOTT OLSEN
Parks & Cemetery Supervisor
CHAD GREENHALGH
Water & Sewer Supervisor
SAM WHITE



PRICE MUNICIPAL CORPORATION
PRICE CITY DEPARTMENT OF PUBLIC WORKS

432 WEST 600 SOUTH * P.O. BOX 893, PRICE, UTAH 84501
PHONE (435) 637-5010 * FAX (435) 637-5031

'Engineering, Public Works, Streets & Fleet, Water & Sewer, Parks & Cemetery, Building Inspection'

PRO OFFICIAL FILE COPY

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APR 19 '10

City Council

RICHARD TATTON

Date	Initials	Code
4/15/10	100	KATHY HANNA SMITH
4/15/10	105	JEFF NIELSON
4/15/10	107	JEFF NIELSON
4/15/10	700	RICK DAVIS
4/15/10	770	RICK DAVIS
5/27/10	774	RICK DAVIS

Action:

Classified April 15, 2010 ENH-6.01
Project: Narrows
Cont. of No: 10024849
File ID: 1122816

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606-7317

Re: Narrows Project Supplemental Draft Environmental Impact Statement (SDEIS)

- 37-1 Water shortages plague the Carbon County area. In 1992 Scofield dropped to a critically low point, resulting in very tight usage restrictions. Extreme measures were taken by local water users to keep the water going into the reservoir outlet and keep the channel leading up to the outlet from freezing. Had the Narrow Dam been in place, preventing water from going into Scofield Reservoir, the City and County would not have been able to avert disaster in 1992.

Construction and operation of the proposed Narrows Dam will bring about a severe hardship to the communities of Price City and Carbon County.

Sincerely,
Price City Public Works Department

Gary D. Sonntag, P.E.
Public Works Director

GDS/gds

ORIGINAL

NARROWS DAM PUBLIC HEARING APRIL 29, 2010, 6:00 P.M.

Report by Gary Sonntag, Price City Public Works Director

Price Municipal Corporation

185 East Main Street

Price, Utah 84501

THE PRICE RIVER VALLEY 1991 DROUGHT DEMONSTRATED WHAT THE IMPACT CAN BE WHEN THERE IS NOT ENOUGH WATER COMING INTO THE SCOFIELD RESERVOIR.

IN THE FALL OF THAT PARTICULAR YEAR A HEROIC EFFORT WAS MADE AS THE RESERVOIR WATER LEVEL DROPPED TO EXTREMELY LOW LEVELS AND TO THE POINT THAT YOU COULD SEE THE LOWER OLD DAM. THE OLD DAM IS APPROXIMATELY 400 FEET INTO THE RESERVOIR WEST OF THE CURRENT SCOFIELD DAM. THE OLD DAM HAD BEEN BREACHED YEARS AGO SO THAT WATER COULD THROUGH IT TO THE OUTLET.

THAT FALL WATER WAS PASSING THROUGH THE BREACH WITH A SMALL STREAM APPROXIMATELY 14 INCHES DEEP AND 6 FEET WIDE. THE OUTLET STRUCTURE WAS A RAISED CONCRETE BOX WITH METAL GRATES ON EACH SIDE. WATER WAS UP 2.5 FEET FROM THE BOTTOM OF THE 4 FOOT GRATES. WATER DROPPED INTO A LARGE DIAMETER PIPE THAT TOOK IT UNDER THE DAM EMBANKMENT INTO LOWER FISH CREEK.

THERE WAS AN URGENCY TO PREVENT THE WATER FROM FREEZING AT THE OLD DAM BREACH AND AT THE OUTLET STRUCTURE.

SHOULD THE WATER FREEZE AT THE OLD DAM BREACH IT WOULD STOP ALL WATER FLOW FROM REACHING THE OUTLET. THIS SAME EFFECT WOULD OCCUR IF THE RESERVOIR WATER LEVEL DROPPED BELOW THE OUTLET GRATE OPENINGS.

TWO SUBMERSIBLE PUMPS WERE BROUGHT IN AND POSITIONED ON STAND-BY SHOULD THIS HAPPEN. THEY COULD BE USED TO PUMP WATER INTO THE OUTLET. AS A SECONDARY MEASURE A SIPHON WAS BEING DESIGNED TO ALSO DRAW WATER FROM THE RESERVOIR INTO THE OUTLET.

IF THE WATER FROZE AT THE OUTLET STRUCTURE IT WOULD STOP THE WATER FLOW AND JEOPARDIZE THE OUTLET. IF THE WATER FROZE AROUND THE OUTLET AND THE WATER BEGAN TO FILL THE RESERVOIR IT WOULD LIFT THE ICE AND OUTLET STRUCTURE WITH IT CAUSING A GREAT DEAL OF DAMAGE.

PRICE MUNICIPAL CORPORATION
P.O. Box 893
PRICE, UTAH 84501-0893

Public Works Director

Continued:
NARROWS DAM PUBLIC HEARING APRIL 29, 2010, 6:00 P.M.
Reported on by Gary Sonntag, Price City Public Works Director
Price Municipal Corporation
185 East Main Street
Price, Utah 84501

A LARGE COMMERCIAL HEAT TAPE SYSTEM WAS ATTACHED TO THE OUTLET STRUCTURE TO PREVENT THIS FROM HAPPENING.

AS A SECONDARY MEASURE AN ATTEMPT WAS MADE TO EXCAVATE DEEPER THROUGH THE OLD DAM BREACH AND INSTALL SIX FOOT DIAMETER CULVERTS TO ALLOW WATER TO PASS THROUGH. THIS DID NOT WORK DUE TO THE BOUYANTCY OF THE PIPE, SO THAT EFFORT WAS ABANDONED AND THE BREACH WAS JUST DUG DEEPER.

THE OVERALL EFFORT WAS ONLY marginally successful in keeping water flowing up to the outlet. IF THERE HAD OF BEEN ANY LESS WATER, THERE WOULD HAVE BEEN NO CHANCE TO EVEN DO THAT.

ITEM #2

THE CAPACITY OF ANY COMMUNITY TO GROW AND FLOURISH SHOULD NOT EXTEND BEYOND ITS ABILITY TO DRAW WATER FROM THE WATERSHED THAT IT IS APART OF. THE WATER SHED THAT IS TRIBUTARY TO A COMMUNITY SHOULD NOT BE INTERRUPTED SHOULD THAT WATER SHED CROSS COUNTY LINES (EXAMPLE: THE TRIBUTARYS SUPPORTING ALL OF THE COMMUNITIES ALONG THE WASATCH FRONT). COMMUNITIES IN A WATER SHED SHOULD BE ENTITLED TO ALL THAT THE WATER SHED HAS TO OFFER, WITHOUT INTERFERENCE FROM COMMUNITIES AND COUNTIES IN NEIGHBORING WATER SHEDS. WATER TAKEN FROM UNRELATED WATER SHEDS SHOULD NOT BE DONE AT THE EXPENSE OF ANOTHER.

THAT BEING THE CASE THE DECISION YEARS AGO TO ALLOW SANPETE WATER CONSERVANCY DISTRICT TO DRAW WATER OFF OF THE PRICE RIVER DRAINAGE DESPITE THE WATER NOT BEING APART OF THE SANPETE NATURAL WATER SHED, WAS NOT RIGHT. TO DATE THEY HAVE PUT IN A MAN MADE DIVERSION. IT HAS HAD AND WILL HAVE DETRIMENTAL EFFECTS ON THE PRICE RIVER WATER SHED AND DRAINAGE. THE DECISION TO ALLOW SANPETE WATER CONSERVANCY DISTRICT TO DO THIS, SHOULD BE RECINDED.

EVEN WITHOUT THE NARROWS DAM IN PLACE THE WATER BEING TAKEN RIGHT NOW HAS HAD A NEGATIVE AND PROFOUND IMPACT ON THE PRICE RIVER VALLEY WATER SHED AND SCOFIELD RESERVOIR WATER LEVELS. THE NARROWS DAM WOULD ONLY INCREASE THE SEVERITY OF THAT

Continued:
NARROWS DAM PUBLIC HEARING APRIL 29, 2010, 6:00 P.M.
Reported on by Gary Sonntag, Price City Public Works Director
Price Municipal Corporation
185 East Main Street
Price, Utah 84501

IMPACT. THE NARROWS DAM SHOULD NOT BE BUILT AND THE CURRENT
DIVERSION OF WATER STOPPED. *

38. PRICE CITY PUBLIC WORKS, RUSSELL SEELEY, PRICE CITY ENGINEER

Mayor
JOE L. PICCOLO
City Attorney
NICK SAMPINOS
**Human Resource &
Risk Management Director**
JOHN DANIELS
Public Works Director
GARY D. SONNTAG, P.E.
City Engineer
RUSSELL SEELEY, P.E.
Streets Supervisor
J. SCOTT OLSEN
Water & Sewer Supervisor
SAM WHITE
Grounds Supervisor
CHAD GREENHALGH
Building Inspection
BOB BENNETT



PRICE MUNICIPAL CORPORATION; PRICE CITY PUBLIC WORKS
432 WEST 600 SOUTH P.O. BOX 893, PRICE, UTAH 84501
PHONE (435) 637-5010 FAX (435) 637-5031
Public Works, Engineering, Streets, Water & Sewer, Fleet, Grounds, Building Inspection

City Council

RICHARD TATTON
JEANNE MCEVOY
KATHY HANNA SMITH
JEFF NIELSON
RICK DAVIS
www.priceutah.net

Peter Crookston
Bureau of Reclamation
PRO-774
302 East 1860 South
Provo, Utah 84606-7317

May 25, 2010

RE: PRO-774

Dear Mr. Crookston,

38-1 I am writing in response to the Supplemental Draft Environmental Impact Statement for the proposed Narrows Dam. The construction of this dam has been debated and argued over for many years. The fact that it has not already been built is a testimony to its controversy and an indication that it is not a good or beneficial project for all who are involved. The satisfaction of the few at the expense of many has never been justification for any project and runs contrary to good government and wise decision making. The construction of the Narrows Dam would temporarily satisfy the needs of a few at the expense of many.

At the heart of this debate is the fact that the watershed boundaries between the two valleys does not coincide with the political county boundaries. This leads residents in Sanpete County to believe that water that falls in another watershed belongs to them and has already led to the construction of the tunnel that allows water to flow unnaturally into a completely different watershed where historically it has not and where naturally it would not. Not only should this dam not be constructed, but the tunnel should be closed to restore the natural and historical flow of water.

Scofield Reservoir is the main and sole drinking water source for the majority of Carbon County. Annual fluctuations in the reservoir translate into actual ramifications for drinking water supplies for Carbon County. The construction of the Narrows Dam would greatly exasperate the real possibility for Scofield Reservoir to completely drain. The construction of the Narrows Dam would greatly reduce the available drinking water for Carbon County. The ability of a handful of farmers to grow an extra cutting of alfalfa does not justify putting at risk the drinking water supply for a community of 20,000. The existence of the Narrows Dam will greatly increase the losses of water due to evaporation. Neither county can take advantage of evaporated water—one will win in the construction of this dam.

Page 2

Sanpete County has cited increased growth as the need for extra water. The majority of the communities in Utah have experienced growth since the Narrows Dam was proposed and every community in the State could benefit from additional water. A community's ability to grow is restricted by its natural resources and communities cannot expect to grow beyond the capacity of these limited resources. If Sanpete County obtains this water they will not be satisfied and will continue to grow. When they have used up the water from the Narrows Dam will they seek to drill a deeper tunnel through the mountain to sap more water into their watershed? The boundaries of the valleys exist and the limitations are real. One thirsty County cannot and should not expect to get sufficient water from another thirsty community.

There are many other valid reasons for not constructing the Narrow Dam. The impacts to wildlife including fish and other animals and the reduction in water quality are all problems that all can live with out. The incentive of additional recreational opportunities available for all is just a sugar coating on a toxic pill. The construction of the Narrows Dam will be detrimental to all who are involved. I encourage you to stop the construction of the Narrows Dam Project.

Please call if you have any questions.

Sincerely,

Russell Seeley, P.E.
Price City Engineer

39. SANPETE COUNTY COMMISSIONER SPENCER COX

Mon 5/31/2010 10:45 PM

Bureau of Reclamation,
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606

To Whom It May Concern:

- 39-1** I am writing this letter to voice my support for the proposed Narrows Dam Project and the draft Environmental Impact Study addressing such. My name is Spencer Cox, I am currently serving an elected Sanpete County Commissioner. I am also a former Mayor and City Councilman and current resident of Fairview, the closest community to the Narrows Project. My Grandfather and Father have worked diligently on the Narrows Project for more than 60 years, and I am excited for the opportunity to voice my support to this very worthy project.

40. SANPETE COUNTY COMMISSIONER STEVE FRISCHKNECHT

Sanpete County Courthouse
160 North Main
Manti, Utah 84642



Commissioners: Claudia Jarrett (Chair), Spencer Cox, Steve Frischknecht

PRO OFFICIAL FILE COPY

RECEIVED
Assessor: Kenneth Benich
Attorney: Ross C. Blackham
Auditor: Ilene B. Roth
Clerk: Sandy Neill
Recorder: Reed D. Hatch
Sheriff: Kevin Holman
Treasurer: Earl D. Clark

Date	Initials	Index
	KS	100
	PC	105
	PC	107
	KS	100
6/13/10	KS	100
6/13/10	PC	774cy

May 28, 2010

To: Peter Crookston
Bureau of Reclamation
302 East 1860 South
Provo, Ut 84642

ACCOR:
Classification: ENVI-600
NARROWS
100 3921
1122816

Dear Mr. Crookston,

- 40-1 I write this letter in support of allowing the Gooseberry Narrows Dam and Reservoir Project to move forward to completion. I have watched this struggle between Sanpete and Carbon counties for over 35 years. Sanpete has bent over backwards, time and time again, in order to appease Carbon county. In good faith, Sanpete has reduced the amount of water each time an agreement was negotiated and each time Carbon has just ignored those signed agreements.

This country was founded on the rule of law. Every court case, including the Utah Supreme Court and the Department of Justice, has ruled in favor of Sanpete. The Utah Legislature has also endorsed this project. There is no question that the water belongs to Sanpete, even Carbon county admits our legal right to the water. Do we, the United States of America, respect the rule of law? Do we, as a country, ignore the decisions of our courts and just go on as though nothing matters? If integrity matters at all, then this decision to proceed with the dam and reservoir should be an easy one.

Central and Northern Sanpete county has no water storage, so later in the season the crops burn and yields are slim. It would be a real economic boon to the area to be able irrigate one more time to finish the crop. When the Narrows project is completed, more crops will be sold, more animals raised and more money brought to the county. Sanpete county is financially one of the poorest counties in the state. We have little in the way of mineral or petroleum resources to draw from. We rely heavily on our agricultural production. However, in the future, as more people discover the beautiful Sanpete valley, more water will surely be needed to supply municipal and industrial growth. Without this water our growth will be severely limited and our children will continue to leave the area to find employment. This water is an economic necessity for our future.

The people of Sanpete county have always used the natural resources available in a sustainable manner. They have wisely used and protected the land and water in a responsible way that preserves our environment for future generations. It just makes sense to develop this resource for future generations for food production, as well as, recreation, fishing, boating, picnicking and a host of other activities that benefit both Sanpete and Carbon counties.

Thank you for the opportunity to comment on this important issue.

Steve Frischknecht
Steve Frischknecht, Sanpete County Commissioner
440 West 200 North
Manti, Utah, 84642
435-835-8561

41. SANPETE COUNTY COMMISSIONER CLAUDIA JARRETT, CHAIR

Commissioners:

Claudia Jarrett, Chair
Spencer Cox
Steve Frischknecht



Assessor: Kenneth Bench
Attorney: Ross C. Blackham
Auditor: Ilene B. Roth
Clerk: Sandy Neill
Recorder: Reed D. Hatch
Sheriff: Kevin Holman
Treasurer: Earl D. Clark

Sanpete County Courthouse

160 N Main • Manti, Utah 84642

May 26, 2010

Bureau of Reclamation
Attn: Peter Crookston
PRO-774
302 East 1860 South
Provo, UT 84606

COMMENTS ON NARROWS SIDEIS

- 41-1 Now is the time for the citizens of Sanpete County to realize the benefits of the Narrows Dam and Reservoir. The need for water storage is so much greater now than it has ever been in the past. Over 70 years of waiting for the beneficial use of this water right is way too long. The need for water for municipal and industrial use as well as the continuing need for agriculture use is becoming more prominent in the northern part of our County. As a resident of Mount Pleasant, I note that outside water rationing begins earlier in the summer each year. Our residents do practice water conservation measures; but with the increased demand for water by farmers and residents, demand far outweighs supply. Our farmers are always compromised with the needs of our city residents for water in the late summer and fall.

The need for water is always a major component of planning for our communities, our farmers & ranchers, and our irrigation companies. Obviously, this need for water to support our economic base—agriculture—is currently our most immediate need. What is paramount in this discussion of the Narrows is that 55% of land in Sanpete County is used for agriculture (versus 21 % in Carbon County). The Narrows project will obviously help to ensure the ongoing agriculture needs of our County remembering that our County already has invested heavily in water conservation with over 60% of the land in the project area irrigated with sprinklers. In order to deliver this much needed water for the sustenance of our agriculture communities and our growing population, this dam is an absolute necessity. Sanpete County has also realized a 20.1% increase in population from 1998-2008 compared to Carbon County with a - 4.1% decrease in population for the same time period (Source: 2010 Utah Counties Fact Book) and is projected to continue this growth trend. So again, the need for this water storage is so much greater now than it has ever been in the past.

With discussions by the State Water Engineer to invalidate water rights that have not been exercised for their beneficial use, communities are looking to preserve their water right by proofing up on them. Price

PO Box 100
Manti, Utah 84642

Telephone: 435-835-2141

Fax: 435-835-2135

Page 2

City recently petitioned the Permanent Community Impact Board for a 50/50 grant/loan of over \$2 million for well development in Emma Park to proof up a water right of over 5,000 acre feet of water for drinking purposes (Water right application 91-152 with change application to move to Emma Park from White River). The claim that Price will be disadvantaged by the construction of the Narrows is not entirely true as Price City clearly has a water right that when developed will be almost equal in amount to the yearly release from the Narrows. However, what is more important relating to this issue is that Sanpete County also benefit from their water right that has been proven to be a valid right but yet to be realized.

As one of our County's Commissioners, I wanted to believe in and honor the integrity and honesty of those who entered in good faith into an agreement that was meant to resolve long held beliefs about the rights to water, the rights to have the benefits of the use of those rights, and the right to build a dam that would facilitate those benefits from those water rights. The 1984 agreement was signed by the then secretary of the Carbon County/Price River Water District, Michael Dmitrich, who was a much respected Utah Senator for many years. In my opinion, it is absolutely abhorrent that even now after over 25 years since the signing of the 1984 agreement that his influence to dishonor this agreement is still prominent in Carbon County. What is important to remember is that when our Utah legislature finally heard the story of this dam and more importantly heard about the 1984 agreement, both the house and the senate passed resolutions in 2009 (after Senator Dmitrich had retired) to support the Narrows Reservoir and Dam. It is now time for Carbon County to find ways and means to conserve water without relying on the storage of Sanpete's water in Scofield Reservoir. I find it so ironic that Scofield was enlarged to store our water, but now uses this enlarged storage as a cry of the impacts of decreased storage if the Narrows Dam is built. Reason, honor and justice should be tantamount for approving a favorable RECORD OF DECISION for this project.

For a long time now, dams have been viewed as a less favorable means for water conservation. However, the need for dams is now receiving greater attention as the need for water storage becomes more prevalent. Water reservoirs are expected to spur growth and create economic benefit as cited in the recent approval of the Jackson Flat Reservoir in Kanab. Similarities exist between the Jackson Flat Reservoir and the Narrows Reservoir. Both will provide much needed water to farmers and ranchers who do not have adequate supplies of water during the latter part of the growing season and to cities to water school grounds, parks, cemeteries, and other municipal needs. The Jackson Flat Reservoir will hold 4,228 acre feet of water for a cost of \$12 million while the Narrows Reservoir will hold four times the acre feet of water (17,000) at less than three times the cost of the Jackson Flat Reservoir. Skeptics who claim this project is too expensive undervalue the need for and economic benefit of dams.

With the economic downturn now facing our nation and particularly our state, now is prime time to begin construction projects. In my experience with construction projects of late, most have come in significantly under projected costs. I believe there is a very good chance that the Narrows cost could be much less than stated in the SDEIS, resulting in less loan, less cost to water users, and possible earlier loan payback.

I have been privy to many of the meetings that Sanpete Water Conservancy District Board has had with the Bureau of Reclamation, with Central Utah Water District, and with Carbon County officials. The last study that was conducted by an independent engineering firm to appease Carbon County once again readdressed the alternatives both in location and method of storage. Totally apparent as a result of this

PO Box 100
Manti, Utah 84642
Telephone: 435-835-2141

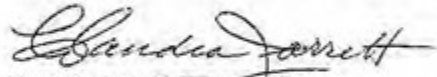
FAX: 435-835-2135

Page 3

study is that the Narrows Dam & Reservoir as proposed in the SDEIS is the most feasible, environmentally friendly, and cost effective of all alternatives. Additionally, mitigation in the SDEIS goes above and beyond what is fair and reasonable and accounts for about 10% of the total cost of the project.

Meeting the needs of our county for more economic opportunities by having additional recreational facilities benefits not only our County but the whole State of Utah. Even though Sanpete County relies heavily on agriculture as its economic base, any and all additional opportunities to build our base only secures our economic prosperity into the future. Camping, flat-water boating and fishing are sports that are valued recreation activities and would be an even more valued recreation opportunity given the pristine and rural location of the proposed reservoir. I have no doubt, that the Narrows Reservoir and Dam will do much to increase tourism and recreation in our County.

I strongly encourage the Bureau to issue a favorable Record of Decision for the building of the Narrows Dam and Reservoir, to approve Sanpete Water Conservancy District's loan application for construction, to approve the use of Reclamation's withdrawn lands for the Narrows, and to grant the perpetual easement so that construction and eventual operation and maintenance of the Narrows can move forward. It is my belief that the future growth, prosperity, and livelihood of northern Sanpete County and the overall economic viability our entire County is dependent on the Narrows dam and reservoir.


CLAUDIA JARRETT, CHAIR
SANPETE COUNTY COMMISSION

PC Senator Orrin Hatch
Senator Robert Bennett
Congressman Jason Chaffetz
Congressman Rob Bishop
Congressman Jim Matheson

Lest we forget—WATER to support human livelihoods should trump water to support sport fishing!

Telephone: 435-835-2141

PO Box 100
Manti, Utah 84642

Fax: 435-835-2135

42. SANPETE COUNTY FARM BUREAU, ROBERT D. BESSEY, PRESIDENT

ORIGINAL

Crookston, Peter L

From: rbessey@mail.manti.com
Sent: Monday, May 24, 2010 9:56 AM
To: PRO NarrowsEIS
Subject: Narrows Project

Mr. Crookston,

42-1 I am the president of the Sanpete County Farm Bureau and wish to make some comments in favor of the Narrows project being approved and constructed.
It is time to put aside all politics and honor previous agreements that Sanpete County be entitled to impound the water.

There is no longer a dispute about the water rights or Sanpete Counties need for the water. We are not surprised that Carbon County is opposed to the project. They have had the use of our water for 75 years have used political means to keep delaying the approval the project.

We are somewhat surprised that the environmental community is opposed to the project. The impounded water will provide a beautiful mountain lake that will be used for fishing, boating and other much needed recreational opportunities for the public.

Thanks for your consideration and please approve the project.

Robert D. Bessey, President

Sanpete County Farm Bureau

NO OFFICIAL FILE COPY
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JUN 04 '10

Copy Data		
Date	Initials	Code
	<i>[Signature]</i>	100
	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
	<i>[Signature]</i>	700
5/4/10	SCB	770
6/21/10	PC	774cy

Project: ENR-6.00
Classification: Narrows
Project No: 10040513
Date: 1122816

43. SANPETE COUNTY FSA, VAL ANDERSON, EXECUTIVE DIRECTOR

Al

ORIGINAL

Crookston, Peter L

From: Anderson, Val - Manti, UT [Val.Anderson@ut.usda.gov]
Sent: Wednesday, May 26, 2010 2:53 PM
To: PRO NarrowsEIS
Subject: Narrows Project

Dear Sirs:

43-1 As one who is intimately involved in Sanpete agriculture I would like to include my voice in support of the narrows project.

Needless to say, agreements have been made in years past between Carbon And Sanpete. Carbon has received the water they were allocated. Sanpete is still waiting. This water is a valuable resource to one of the poorest Counties in the State of Utah. Although not a great deal of water this resource would benefit agriculture and industry as a whole. Crop in North Sanpete could benefit on a par with the South Sanpete area.

I deal in Sanpete agriculture every day. I see the struggle that the North Sanpete farmers have. We are denied the ability to drill wells or store excess water. Are we now to be denied a water resource that was granted many years ago? Especially a resource that will only go on down to the Colorado River. A resource that will be lost to Sanpete and to Utah.

I would greatly urge the consideration of fairness and integrity to live up to the agreements that have been made.

Sincerely,

Val Anderson.

Sanpete County FSA Executive Director

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JUN 04 '10

Reply Date	Initial	Code
	<i>[Signature]</i>	100
	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
	<i>[Signature]</i>	700
6/10/10	BM	770
		774cy

Action:
 Classification: ENV - G.00
Nonclass
 Date of Review: 10039738
 by: 1122816

44. SANPETE COUNTY RECORDER, REED D. HATCH

AL

ORIGINAL

Crookston, Peter L

From: recorder [recorder@sanpetecounty-ut.gov]
Sent: Tuesday, May 25, 2010 4:52 PM
To: PRO NarrowsEIS
Subject: Sanpete County

- 44-1 Hi my name is Reed D Hatch and I am the Sanpete County Recorder. I have watched as people have tried to get water to built with little success. To get a building permit you need 1 ac foot of water and with how scarce water shares are it make it hard to develop. I feel it is only right to get Sanpete County the water that has been promised for years. On the other side of things we have a cabin on flat canyon(a couple of miles east of the dam site) and think it would a great asset for boating and fishing. Fairview canyon is already a great place to snowmobile and where they maintain the road it has great access. I really didn't want to write but feel that the government should stop ignoring Sanpete and get the dam built and supply the water to it rightful owner.

Thanks Reed D Hatch

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JUN 04 '10

Reply Date		
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6/25/10	<i>[Signature]</i>	770
6/24/10	<i>[Signature]</i>	774cy
Action:		
Classification: ENU-6.00		
Project: Narrows		
Case Number: 10040390		
Date: 1122816		

**45. SANPETE COUNT SHERIFF'S OFFICE, AMANDA BENNETT, JAIL
RECEPTIONIST**

Wed 5/5/2010 12:43 PM

- 45-1 New jobs, and water for our farmers? Who wouldn't be for that, I'm excited for the narrows project to be completed. We need this for our county!!

Amanda Bennett

Sanpete County Sheriff's Office

Jail Receptionist

abennett@sanpetecounty-ut.gov

PO Box 130

Manti, UT 84642

Phone 835-2191

Fax 835-2150

47. SANPETE COUNTY SOIL CONSERVATION DISTRICT, SCOTT SUNDERLAND, CHAIR

ORIGINAL

PRO OFFICIAL FILE COPY

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MAY 04 '10

SANPETE COUNTY SOIL CONSERVATION DISTRICT



Date	Initials	Code
5/4	CS	100
	CS	105
	CS	107
	CS	100
	CS	110
5/28/10	PC	7740y

May 3, 2010

Action:
Classification: ENV-6.00
Project: Narrows
County No: 10029192
D.D.: 1122816

Bureau of Reclamation
Attn. Peter Crookston
PRO-774 302 East 1860 South
Provo, UT 84606

Dear Mr. Crookston:

47-1 The Sanpete Conservation District has reviewed the Environmental Impact Statement for the proposed Narrows Dam and Reservoir. We strongly encourage the Bureau of Reclamation to implement the Preferred Alternative calling for the large reservoir.

The document correctly observes that when the idea of water storage for Sanpete County was first discussed in the 1930's, it was part of a plan that would double the capacity of Scofield Reservoir for Carbon County. Carbon received their end of the bargain over 50 years ago. Sanpete has not received what was promised to them. Fundamental fairness and integrity dictate that the proposed alternative be implemented.

Sanpete County clearly owns the water rights involved. The Supreme Court and the US Department of Justice have both acknowledged Sanpete's water rights. The Utah House of Representatives and Utah State Senate passed resolutions in 2008 and 2009 to implement the project.

In addition to the obvious economic and agricultural benefits to Sanpete County, we believe there is a shortage of flatwater recreational opportunities for the people of Utah. The Dam and reservoir would provide these opportunities for Sanpete County as well as the surrounding area.

Sanpete County has dedicated a huge amount of energy, financial and emotional resources to identify the most appropriate, effective and environmentally-friendly means to conserve water. The Narrows Dam and Reservoir fulfills those objectives. The Sanpete Conservation District expects a favorable Decision on the Narrows Dam and Reservoir.

SUNDERLAND
HE-73 Box 3104
Chester, UT 84603

If there are any questions, please call us at 435-835-4111 ext. 14.

Sincerely,



Scott Sunderland
Chair, Sanpete Conservation District
HC 13 Box 3104
Chester, UT 84623

cc.

Senator Orrin Hatch
131 Russell Building
Washington, DC 20510

Senator Robert Bennett
431 Dirksen Building
Washington, DC 20510

Congressman Jason Chaffetz
1032 Longworth Building
Washington, DC 20515

Congressman Rob Bishop
124 Cannon Building
Washington, DC 20515

Congressman Jim Matheson
410 Cannon Building
Washington, DC 20515

48. SPRING CITY, PAMELA ANDERSON, CITY COUNCIL PERSON

Sun 5/30/2010 6:22 PM

- 48-1 The Narrows Dam Project should be allowed to be completed. The nearly 100 years of waiting is TOO long! Sanpete County, especially the northern part of the county, really needs this water.

Water Rights "Them's fightin' words" is very much a part of life in the West. We are arid. I believe that the more water storage facilities the better. It is so much the better to be prepared for the lean years that always come. Water storage is a godsend. I love the land and the life on it, but I believe that these things can adapt/relocate as needed and that human need for water far out ways any negative arguments presented against this project. The environment can only benefit from this as well.

We need to hold to the previous approval and stop wavering.

Please, let's get on with the construction.

Pamela Anderson
Resident and City Council Person
240 N 400 E
PO Box 409
Spring City, UT 84662

WATER USER AGENCIES AND ORGANIZATIONS

- 49. Birch Creek Irrigation Company, Board of Directors**
- 50. Birch Creek Irrigation Company, M. LaMont Pugmire, Secretary-Treasurer**
- 51. Carbon Water Conservancy District, Richard Lee**
- 52. Cottonwood Gooseberry Irrigation Company, Lynn Anderson, President**
- 53. Gunnison Irrigation Company, Allen Dyreng, President**
- 54. Mayfield Irrigation Company, William Kay Christiansen, President**
- 55. North Carbon Salinity Improvement Project, Frank Saccomanno, President, Spring Glen Canal Company**
- 56. Price River Water Improvement District**
- 57. Price River Water Users Association, William Butcher, President**
- 58. Rock Dam Irrigation Company, Don Hardy, President**
- 59. Sanpete Water Conservancy District, David L. Peterson, Member**
- 60. Sanpete Water Conservancy District, Edwin B. Sunderland, Chairman**
- 61. Spring Canyon Irrigation Company, Scott Durrant, President**
- 62. Wales Irrigation Company, Roger Rees, President**

49. BIRCH CREEK IRRIGATION COMPANY, BOARD OF DIRECTORS

JUN-1-2010 15:50 FROM:SKYLINE MOUNTAIN RES 14354279505

ORIGINAL

Birch Creek Irrigation Company

P.O. Box 116

Mt. Pleasant, UT 84647

June 1st, 2010

To: Bureau of Reclamation
Attention Peter Crookston, PRO 774
302 East 1860 South
Provo, UT 84606-7317
Fax # 801 379 1159

From: Birch Creek Irrigation Company
P.O. Box 116
Mt. Pleasant, UT 84647

Re: Narrows project

TO:18813791159 FILE COPY 1/1

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Reply Date		
Date	Initials	Code
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		770
		774cy

Action:

Classification: ENV - 10.00

Project: Narrows

Comments: 10037381

Ref ID: 1122816

- 49-1 Thank you for allowing comment. At this time, we would like to plead with you to see the need after so many years of deprivation, to finally allocate our 5,400 acre feet of water for use in the north Sanpete Valley.

You will hear much hue and cry from the east side of the mountains. Please don't be swayed by the volume and loudness of the cries from them. They have numerous reservoirs and ponds that allow them to water the whole year. They will bombard you with noise.

We ask that you see through the noise and look at what is fair and right. The Sanpete Valley has been denied too long its water and now is the time to rectify this injustice.

Our farmers and ranchers are only able to water for typically two crops of hay. This is not because the season is too short but it is because without reservoir storage, when the snow melt ends, the watering ends. With this water and its ability to be held and distributed later in each season, a tremendous value will occur.

Please decide this on what is fair and right and not who may be the loudest.

Thankyou for listening.

Sincerely,

Stan Smith, Mont Pugmire, John Lee, Kevin Turpin and Alan Summerhays

Board of Directors for Birch Creek Irrigation Company, Mt. Pleasant/Fairview, UT

**50. BIRCH CREEK IRRIGATION COMPANY, M. LAMONT PUGMIRE,
SECRETARY-TREASURER**

AL

Crookston, Peter L

From: Monte Pugmire [dadpug@gmail.com]
Sent: Tuesday, June 01, 2010 3:25 PM
To: PRO NarrowsEIS
Subject: Narrows project comment.

- 50-1 Thank you for allowing comment. It is our hope that reason and fairness will apply in the decision that comes forth. The Sanpete Valley has been denied its rightful share of the water for too many years. There will be a lot of rhetoric by those on the east side of the mountain even though they have multiple reservoirs to store and provide water throughout the irrigation season. We have none. Our farmers and ranchers have only what comes down from snow melt and when that is gone, they just have to quit watering.

What a boon to the farming economy of the Sanpete Valley if we were to finally have access to our 5,400 acre feet of water. This water could be held in storage and released toward the end of the season enabling the users the opportunity to farm and water for the whole season and not be deprived life sustaining water for the latter 1/2 of each year.

Please. We plead with you to make your decision NOT based on who makes the loudest noise but in favor of those whose water right this is. This is not a vote and the one with the most noise and advertising effort wins. It is an issue of right and fair. We urge you to see the need here and allow our water to come to our valley for its highest and best use.

Thank you for listening.

Respectfully,

M. LaMont Pugmire
Sec-Treas.
Birch Creek Irrigation Company

dated this 1st Day of June 2010.

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JUN 10 '10

Reply Date	Initials	Code
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	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
	RS	700
6/22/10	Sam	770
6/23/10	PC	774CH
Action:		
Classification: ENV-600		
Project: Narrows		
Comments: 1004 Hole 2		
File: 1122816		

51. CARBON WATER CONSERVANCY DISTRICT, RICHARD LEE

AL

ORIGINAL

CARBON WATER CONSERVANCY DISTRICT

P.O. Box 509
Helper, Utah 84526
Phone: (435) 472-3357
Fax: (435) 472-3324

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JUN 01 2010
Richard N. Lee
Secretary • Treasurer
David R. Anderson, CPA
Attorney
Bruce K. Boyner
Edward H. Hulse
Michael M. Hulse
6/10/10
Action:
Classification: ENV - 16.00
Project: Narrows
Comments: 10039696

June 1, 2010

Bureau of Reclamation
Attention Peter Crookston (PRO-774)
302 East 1860 South
Provo, UT 84606-7317
narrowsSDEIS@usbr.gov

Re: Narrows Project – Comments of Carbon Water Conservancy District on Supplemental Draft Environmental Impact Statement

Dear Mr. Crookston:

The Carbon Water Conservancy District hereby submits the attached comments (and associated exhibits) to the referenced Supplemental Draft Environmental Impact Statement ("SDEIS") covering the proposed Narrows Project. As you know, the District may submit additional comments once it receives and reviews documents from the Bureau in response to our outstanding FOIA request.

Please contact me if you have any questions regarding this submission.

Sincerely,

Carbon Water Conservancy District


Richard Lee

cc: Timothy Witman (U.S. Army Corps of Engineers)
William Damery (Utah Division of Water Quality)
Larry Svoboda, NEPA Program Chief; Brian Caruso, Wetlands Unit Chief (U.S. Environmental Protection Agency, Region 8)
Forest Supervisor, Manti-La Sal National Forest

4831-8869-8374.1

NOTICE: IF YOU DETACH
ENCLOSURES, PLEASE INSERT
CODE NO. PRO 774

**Comments of the Carbon County Water Conservancy District
On the
Narrows Project Supplemental
Draft Environmental Impact Statement**

June 1, 2010

This document provides the initial comments of the Carbon Water Conservancy District ("CWCD") on the Narrows Project Supplemental Draft Environmental Impact Statement (SDEIS). Because the CWCD is awaiting documents in response to a Freedom of Information Act Request made to the Bureau of Reclamation (the "Bureau") in April 2010, it reserves the right to supplement these comments after it has obtained and reviewed the requested documents, and the Bureau has indicated it has a policy of accepting such comments even if submitted after the technical close of the comment period.

The CWCD oversees operation and maintenance of Scofield Reservoir, which is located a few miles downstream of the proposed Narrows Project and would suffer significant impacts if the Narrows Project were constructed. The Scofield Reservoir is the largest single source of water supply for municipal, industrial, and agricultural water in Carbon County and also provides a major recreational resource and sport fishery.

As the responsible entity overseeing Scofield Reservoir, the CWCD has an obvious interest in the accuracy and thoroughness of the final EIS for the proposed Narrows Project. This interest has been further confirmed since the publication of the 1998 draft EIS for the Narrows Project ("DEIS"), in the form of two decisions by the federal courts. (*Sanpete Water Conservancy District v. Carbon Water Conservancy District et al.*, Findings of Fact and Conclusions of Law, entered June 3, 1991 (Case No. 2:96-CV-975); *aff'd* 226 F.3d 1170 (10th Cir. 2000)). As held by the Federal District Court of Utah, and affirmed by the Tenth Circuit Court of Appeals, the CWCD and other Carbon County water interests have never agreed to development of the Narrows Project, including by their participation in the 1984 Compromise Agreement, and they have every right to submit critical comments and otherwise participate in the NEPA and permitting process for the Narrows Project.

When the DEIS was last released for comment in 1998, several Carbon County interests combined to form the Carbon Water Committee, and submitted a detailed set of comments to the Bureau and to the Army Corps of Engineers (a cooperating agency for the EIS)(the "Corps") on the DEIS and the Clean Water Act ("CWA") Section 404 permit application ("DEIS Comments"). The DEIS Comments have never been responded to or otherwise specifically addressed by the Bureau or Corps. The CWCD adopts and incorporates the substance of the DEIS Comments here and requests that each comment be addressed in the Final EIS, as required under the Council of Environmental Quality ("CEQ") NEPA regulations. (A copy of the DEIS Comments is attached as Exhibit 1). To assist the agencies in this task we have created a table that briefly summarizes each of the DEIS Comments, provides the relevant citation to the 1998 DEIS section being addressed as well as the citation to the corresponding section of the SDEIS, and includes a notation of whether it appears that changes or updates were made to that section of the document. This Comment Table is attached as Exhibit 2, and we hereby request the

Bureau, with input from the Corps as appropriate, consider and respond to the DEIS Comments as well as any other additional comments included in the Comment Table.

In short, based on the DEIS Comments, the Comment Table, and as further supplemented below¹, the CWCD believes the SDEIS is fundamentally flawed, both in terms of the process that was used to prepare and issue the SDEIS, and in terms of the scope and content of the analysis itself. To address these shortcomings, the Bureau must either withdraw this SDEIS and start over with a new scoping and EIS process followed by release of a comprehensive new draft EIS, or issue a supplement to the SDEIS that includes the new and updated analysis and alternatives that are required in order for the EIS to pass muster under NEPA and the CWA.

A. COMMENTS REGARDING THE PROCESS OF THE SDEIS.

51-1 1. The DEIS Should Have Been Re-scoped and Then Re-issued.

The Bureau should have re-scoped the project and then published a new draft EIS for public comment and review rather than issuing a so-called “Supplemental” draft EIS eleven years after the first draft was released and never finalized. The Bureau’s decision to publish a “supplement” improperly avoids the scoping process, and the response-to-comment process, and thereby violates NEPA. In addition, the SDEIS fails to identify, let alone explain whether and how it responded to the extensive substantive comments it received on the 1998 DEIS, further evidencing the current SDEIS is more analogous to a new draft EIS rather than a supplement.

First, based on the facts of this project—where a DEIS was prepared eleven years earlier but subsequently not released—the Bureau has improperly avoided NEPA’s scoping requirements by preparing a so called “supplemental” DEIS rather than issuing a new DEIS. While the CEQ regulations (40 C.F.R. § 1502.9) provide that true “supplements” to a draft EIS are not always required to undergo NEPA’s scoping procedures, we disagree with the Bureau’s interpretation and application of this regulation in the present case. The CEQ could not have intended to allow an agency to circumvent the scoping requirement by characterizing a stale document as a “Supplement” to a draft EIS, compiled eleven years earlier and subsequently abandoned and then revived.

51-2 Significantly, the SDEIS never specifies what information is being supplemented from the 1998 DEIS; there is no identification in the SDEIS as to what information remains relevant, what information has been updated, what information and analysis is supplemental, nor the substance of the comments that were received and how they affected the revised studies. (One way this might have been done was using a redline-strikeout format, or making notations in the margins, where changes had been made, and including a separate section explaining the basis for each update or supplement to the DEIS.) By failing to identify and discuss these issues, the SDEIS leaves the reader guessing and is nothing more than a new stand-alone DEIS. Consequently, it should have been undergone a full scoping review pursuant to NEPA regulations 40 C.F.R. § 1501.7.

¹ CWCD also hereby adopts the comments on the SDEIS submitted by Price River Water Improvement District and Trout Unlimited.

Of course, the primary purpose of scoping is to identify the significant issues related to the proposed action. Once the significant issues are identified, they can be analyzed and documented in the draft EIS, which is put out for public comment specifically to facilitate review and input by other agencies and public stakeholders, so that the final EIS has the benefit of that input. When proper scoping is not conducted for a draft EIS, there is the possibility that significant issues will be missed, and then raised for the first time in the public comments on the draft EIS. If the agency then chooses to analyze those issues for the first time in the final EIS, rather than preparing a supplemental draft EIS, the public will be deprived of its chance to review and comment on this new analysis. This is essentially what has happened in the present case.

51-3

For example, in 1998 Climate Change was a relatively obscure environmental issue, whereas today it is one of the leading environmental issues that is routinely addressed in NEPA documents, and which has particular relevance to the analysis for long-term water resource projects. New information has also arisen regarding the toxic substances that are created from the treatment of water containing high levels of organics, like the water that will be released from the Scofield Reservoir if the Narrows Project is built. The lists of species considered endangered, threatened or sensitive have been revised, as has our understanding of the location and nature of important habitat. Had proper scoping been done, these issues (and no doubt other new issues that the Bureau will hear about for the first time in comments on the SDEIS) would have been included and analyzed in the SDEIS, allowing the public to review and comment on the same before the EIS is finalized. Instead, unless the Bureau either withdraws and re-releases the SDEIS with analysis of these new issues incorporated, or issues a true draft supplement to the SDEIS that addresses the new issues and information, the public will see the Bureau's analysis of these issues for the first time when a final EIS is released. That, of course, would deprive the public of a meaningful chance to comment, contrary to a bedrock NEPA requirement.

Second, the failure to address the comments the agencies received on the 1998 DEIS further demonstrates that the SDEIS is nothing more than a re-release of an outdated draft rather than a true supplement. If this SDEIS were truly a supplement, it should identify what information is actually being supplemented, and the original comments from 1998 should have been recognized and substantively addressed in this SDEIS, in a transparent fashion. Instead, the SDEIS provides no information regarding what comments were submitted by whom to the Bureau and the other cooperating agencies back in 1998, whether and how the substance of those comments was considered by the agencies, and if so whether the analyses were revised, and if not, why not. By failing to identify whether and how the substantive comments received in 1998 were addressed, the Bureau has further muddled the NEPA process and improperly precluded meaningful public involvement.

There are two things the Bureau might do to address this flaw, prior to issuing a final EIS: First, it could withdraw the SDEIS, treat the comments it received on the SDEIS as essentially being scoping comments, and then issue a new draft EIS that includes analysis that takes the substance of the comments into account. Or, second, it could prepare and issue a true supplement to the SDEIS, which specifically calls out and addresses all of the new issues and updated information and analysis, take public comment on the supplement, and then issue a combined final EIS that

incorporates the substance of both documents, including comment responses. In the absence of doing one or the other, the Bureau will issue a final EIS that violates NEPA's scoping and public involvement process.

B. COMMENTS REGARDING THE SCOPE AND CONTENT OF THE SDEIS

51-4 1. The Purpose and Need Description in the SDEIS Violates NEPA.

The purpose and need of the project, including the alternatives selection criteria, is problematic in at least two regards. First, the SDEIS adopts the private party's interest—the SWCD's purpose for the project—entirely, and fails to set forth any purpose and need on behalf of the agencies that will utilize the EIS for their decisions (Bureau, Corps, Forest Service). While acknowledging that it is permissible for an EIS to include a statement of the applicant's purpose and need, the regulations and case law are clear that an EIS must also include a separate statement of the agency's purpose and need, and it is the agency's purpose and need, not the applicant's, that should dictate the alternatives considered. *See* 40 C.F.R. § 1502.13; *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, --F.3d--, 2010 WL 1980717, *10 (9th Cir. 2010). The Narrows SDEIS acknowledges that its statement of purpose and need is drawn directly from SWCD's "stated purpose and need in making its application." SDEIS at 1-6. The "primary" purpose is described as "to enable SWCD to develop an irrigation and M&I supply source for users in north Sanpete County, Utah, whereby the average annual shortages to irrigators in the project area might be reduced as nearly as possible to 5%." *Id.* The secondary objectives are to provide "improved and additional recreation and fishery opportunities in Sanpete County." SDEIS at 1-7.

By exclusively relying on SWCD's stated purpose and need, the Bureau has failed in its duty to provide its own, agency-specific statement of purpose and need as required by NEPA. In effect, the Bureau has adopted Sanpete's concept of "irrigation shortage" (*i.e.*, having less than 95% of the water needed to ensure a third or fourth crop of alfalfa can be grown every year), and Sanpete's desire for an additional fishery and recreation source in Sanpete County, as "needs" that must be satisfied for purposes of the EIS alternatives analysis. There is no separate purpose and need statement from the Bureau's perspective, or why the stated goals and desires of SWCD were allowed to dictate the scope of the alternatives analysis.

51-5 Second, the selection criteria developed to formulate alternatives are too narrow, and thus preclude meaningful review of reasonable and practicable alternatives. The courts have consistently recognized that the purpose and need of a project cannot be defined "so narrowly that it foreclose[s] a reasonable consideration of alternatives." *See Utah Env'tl Congress v. Bosworth*, 439 F.3d 1184, 1194-95 (10th Cir. 2006) (citing *Davis v. Mineta*, 302 F.3d 1104, 1119 (10th Cir. 2002)); *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, *supra* (holding an agency may not "circumvent this proscription by adopting private interests to draft a narrow purpose and need statement that excludes alternatives that fail to meet *specific private objectives* . . ."). Indeed, the Corps, a cooperating agency on this project, also repeatedly commented on this problem with the DEIS. *See* correspondence between the Corps to Mr. Noble, dated Oct. 7, 1992 and July 21, 1994, which is included as an attachment to the DEIS Comments. For example, one of the selection criteria provides that the project must satisfy the SRPA

requirements. SDEIS at 2-1. Thus, alternatives such as conservation through retirement of irrigated lands; Central Utah Water Project alternative; or year-round release with groundwater exchange are but just a few of the alternatives eliminated from consideration because they do not meet the overly narrow criteria of SRPA eligibility.

In effect, by including this SRPA eligibility requirement, the SDEIS has transformed the purpose of the action from providing SWCD with a new supply of late season irrigation water, to ensuring that SWCD gets a project that requires an SRPA loan. This essentially eliminates the Bureau's discretion to issue a record of decision that denies SWCD's SRPA loan application even if there is an alternative that is less expensive, is capable of being funded without an SRPA loan, and has far less environmental impacts. Notably, members of Utah's congressional delegation have repeatedly informed Carbon County and Sanpete County interests that if the two counties can agree on a plan to provide SWCD late season water, the delegation would work to secure funding for such a plan. Eliminating any alternative that is not, or may not be, eligible for SRPA funding is particularly unreasonable under these circumstances.

Having such a narrow selection criteria artificially constricts the list of feasible alternatives so as to result in only the proposed action, or similar variations of the same project, satisfying the selective criteria. This overly restrictive formulation violates well-established NEPA principles.

51-6

2. The SDEIS Includes an Improper Review of Alternatives.

a) Failure to Consider Reasonable and Practicable Alternatives violates NEPA and Section 404 of the CWA.

The SDEIS fails to consider one or more reasonable alternatives, which is particularly egregious because the proposed action would have a significant impact on wetlands and other special aquatic sites, which are provided special protection under Section 404 of the federal CWA. Section 404's requirements are in fact more stringent than NEPA's with respect to the alternatives analysis, thus further confounding the SDEIS's insufficient alternatives review.

NEPA requires an EIS include "all reasonable alternatives" to a proposed action. In fact, the consideration of alternatives is often referred to as the "heart of the environmental impact statement." See *Fuel Safe Washington v. FERC*, 389 F.3d 1313, 1323 (10th Cir. 2004) (internal quotations omitted). Therefore, an agency must rigorously explore and objectively evaluate all reasonable alternatives. *Ass'ns Working for Aurora's Residential Env't v. Colorado Dep't of Transp.*, 153 F.3d 1122, 1130 (10th Cir. 1998). Indeed, the failure to consider viable alternatives renders an EIS invalid. See *Utahns for Better Transp. v. Dep't of Transp.*, 305 F.3d 1152, 1171 (10th Cir. 2002) (holding an EIS to be inadequate because it omitted consideration of certain reasonable alternatives in the FEIS); see also *Friends of Southeast's Future v. Morrison*, 153 F.3d 1059, 1065 (9th Cir. 1998) (holding the existence of reasonable but unexamined alternatives renders an EIS inadequate).

Further, for a project like the Narrows, when an EIS is being utilized by the Corps in connection with its decision on whether to grant a CWA Section 404 permit for a project that will include a significant impact to wetlands, the Corps' regulations provide that the EIS alternatives analysis

should be even more rigorous and should be structured to provide the specialized information required under Section 404(b)(1) guidelines. *See* 40 C.F.R. § 230.10(a)(4). The Section 404(b)(1) guidelines create a presumption against filling those types of waters “if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem.” *See* 40 C.F.R. § 230.10(a). Under the guidelines, a “practicable” alternative is one that is “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” *Id.* Where, as with the Narrows Project, the discharge is proposed for wetlands and the project is not “water dependent,” practicable alternatives are presumed to exist, and the applicant has a burden of affirmatively demonstrating that the proposed action is the “least environmentally damaging practicable alternative,” or “LEDPA,” and that other less environmentally damaging alternatives are not practicable. Consequently, the CWA/LEDPA analysis requires even more than a typical NEPA “reasonable alternatives” analysis, in the sense that it should contain information that allows the Corps to conclude that the presumption of the existence of a less environmentally damaging to the proposed action has been overcome, and the proposed action is truly the LEDPA. *See generally Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257 (10th Cir. 2004) (citations omitted) (discussing alternative obligations applicable to Corps’ permit issuance).

In addition, NEPA regulations require an agency to consider alternatives that are not within the jurisdiction of the lead agency. *See* 40 C.F.R. § 1502.14(c). This means the Bureau’s overly narrow selection criteria, which require an alternative to meet the SRPA requirements, violated NEPA’s standard.

For reasons explained in the DEIS Comments, (*see* Exhs. 1 and 2) the SDEIS improperly rejects a number of “reasonable” and “practicable” alternatives, that would cause far less damage to the aquatic ecosystem, and we fully adopt those comments and criticisms here. For example, the SDEIS should have considered the following alternatives in detail:

- Conservation measures
- Development of existing groundwater
- Conjunctive use of surface and groundwater
- Water from Central Utah Project or funding pursuant to Sections 206 and/or 207 of the Central Utah Project Completion Act
- Retiring irrigated lands
- Not growing a third crop of hay
- A combination of conservation measures, retiring irrigated lands, and not growing a third crop of hay

51-7

b) Improper Rejection of Aquifer Storage and Recovery Alternative

In addition, we address the SDEIS’s unjustified failure to carry forward yet another reasonable and practicable alternative that would have far smaller impacts to wetlands and other environmental resources than the proposed action, *i.e.*, the so called “Carbon County Proposed Recharge Alternative.” This alternative, which was suggested by Carbon County interests, would effectively substitute an aquifer storage facility in Sanpete County, near the lands that would be served by Sanpete’s 5400 acre foot water right, for the proposed Narrows Dam and Reservoir, thereby avoiding almost all of the very sizeable wetland, streambed and riparian

impacts of the dam and reservoir in the Gooseberry headwaters. Under this proposed alternative, water would be diverted from the Gooseberry drainage during the early season high flows, conveyed through a rehabilitated Narrows Tunnel, down Cottonwood Creek, and then into a pipeline system along the east bench of northern Sanpete Valley. The water would be directed into a series of infiltration basins located in alluvial fan deposits along the bench, where it would infiltrate and be stored in the shallow aquifer and then pumped (from existing and new wells) and piped to nearby project lands for late season irrigation.

Similar systems, often referred to as aquifer storage and recovery systems (ASRs), or managed aquifer recharge systems (MARs), are increasingly being constructed in Utah and throughout the West, as a less costly and less wasteful means than a dam and reservoir for storing water. Indeed, Utah enacted the Groundwater Recharge and Recovery Act (U.C.A. §§ 73-3b-101 *et seq.*) to enable ASR projects and six such projects are currently either operational or in the permitting process in Utah.² It was the success of these projects, and the obvious advantages of ASR/MAR over reservoir storage that contributed to Carbon County's suggestion that an ASR alternative to the Narrows Project be considered. Further, due to its avoidance of most of the wetland impacts of the proposed action, the ASR alternative must be given very serious consideration for purposes of the LEDPA analysis.

Unfortunately, while the SDEIS acknowledges that Carbon County's suggested ASR alternative would meet the project's purpose and need, that alternative was summarily rejected based on the Bureau's adoption of the findings of the Sanpete County Master Plan Update ("Sanpete Update"), a document prepared for SWCD by a private consultant with "oversight" by the Central Utah Water Conservancy District ("CUWCD"). SDEIS at 2-60. There is no indication in the SDEIS that the Bureau independently reviewed and verified the work and conclusions in the Sanpete Update, as it is legally required to do. *See* 40 C.F.R. § 1506.5(a); *see also San Francisco Baykeeper v. U.S. Army Corps of Eng'rs*, 219 F. Supp. 2d 1001, 1012 (N.D. Cal. 2002). This was especially important here, given that much information in the Sanpete Update came from SWCD, and also given the close relationship between CUWCD and SWCD (SWCD is a member of the CUWCD and regularly looks to it for funding and assistance with its desired projects³), and between the private consultant and CUWCD (the consultant has been engaged by CUWCD to undertake several large and likely lucrative projects). Had the Bureau done a thorough review, it no doubt would have found the analysis and conclusions in the Sanpete Update, as well as the so called "public comment" process for the report, to be sorely lacking, and certainly not adequate under NEPA or the CWA for rejection of an alternative that would be far less damaging to the aquatic ecosystem than the proposed action.

In order to confirm whether the SDEIS and the Sanpete Update improperly rejected the ASR alternative, the CWCD engaged Golder Associates ("Golder"), an independent engineering firm

² *See* <http://www.waterrights.utah.gov/groundwater/asr/ASRlist.asp>; *see also* <http://geology.utah.gov/utahgeo/water/index.htm>

³ *See, e.g.,* [http://www.ch2m.com/corporate/markets/water/assets/ProjectPortfolio/water_resources/Agricultural Svcs1.pdf](http://www.ch2m.com/corporate/markets/water/assets/ProjectPortfolio/water_resources/Agricultural%20Svcs1.pdf) (Uinta Basin Irrigation Replacement Project); *see also* <http://www.hydroworld.com/index/display/article-display/358952/articles/hydro-review/volume-28/issue-3/feature-articles/project-profiles/jordanelle-developing-new-hydro-at-an-existing-dam.html> (Jordanelle Dam hydro design); *see also* <http://www.allbusiness.com/science-technology/engineering-civil-engineering/11435838-1.html> (Olmstead Flowline Project).

that has considerable experience with ASR/MAR projects, to review the assessment of the ASR alternative in the SDEIS and Sanpete Update, and to provide its view of whether such an alternative is feasible. Golder concluded that the technical justifications given for rejection of the ASR alternative were unsubstantiated, and that the ASR alternative appears to be feasible, from both a technical and economic standpoint. A copy of the technical memorandum, referred to herein as Golder ASR Memo, prepared by Golder is attached as Exhibit 3, and is briefly referred to in the following discussion. Also attached are professional resumes for Mike Brown, Exhibit 4, and for Robert Long, Exhibit 5, authors of the Golder ASR Memo. In addition to its conclusion that an ASR project is feasible and would avoid most of the wetland and riparian impacts of the proposed Narrows project, the Golder ASR Memo also notes other advantages of ASR, including a lower cost, considerably less evaporative loss (over 1,200 acre feet less evaporation annually), and benefits to the stream environment in the Sanpete Valley.

The Golder ASR Memo provides a more thorough and substantiated assessment of the feasibility of an ASR alternative than the Sanpete Update, and it must be carefully reviewed and considered by the Bureau, with the results of that review reflected and documented in the final EIS. We believe the only reasonable and legal conclusion is for the Bureau to include an ASR alternative in the new supplemental DEIS that the Bureau must prepare.

An summary of why it was wrong for the Bureau to reject the ASR alternative in the SDEIS follows:

- The first reason given by the SDEIS for rejecting ASR is that “[i]t is unlikely that an aquifer with a capacity to hold over 4,000 acre-feet of water could be found in northern Sanpete County.” SDEIS at 2-60. Even if this were true, the fact it is “unlikely” that an adequate aquifer could be found is not grounds, under NEPA or the CWA, to dismiss an environmentally attractive alternative – an effort must be made to determine, based on objective and verifiable information and with a degree of confidence, whether adequate aquifer storage capacity exists. Further, the basis for this conclusion is apparently a mere conversation between the author of the Sanpete Update and a geologist during which the geologist “indicated” that it is “unlikely” a sufficiently large aquifer could be found. *See* Sanpete Update at 20 (notably, the Sanpete Update does not include a reference list). This is the only source of information given by the Sanpete Update for its aquifer storage conclusion. Yet, in a technical memorandum that was submitted as a comment on the draft Sanpete Update, and which was included in the Sanpete Update’s Appendix but ignored in the body of the document, an experienced and credible engineer with detailed, long-term knowledge of surface and groundwater use in Sanpete Valley flatly disputed the Sanpete Update’s conclusion: “There has been unplanned conjunctive use going on for many years throughout the valley, with surface water supplies being supplemented with ground water pumped from alluvial fan aquifers at Manti Creek, Willow Creek, Ephraim Cottonwood Creek, Twin Creek, Cedar Creek, Oak and Canal Creeks (near Spring City), Pleasant Creek, Excell Canyon, and in the Fountain Green area. These alluvial fans are very suitable for aquifer storage and recovery operation. Indeed, they have been functioning in an unplanned and natural manner for many years.” *See* Memorandum to CUWCD from Carl H. Carpenter, P.E. (June 18, 2008) (emphasis

added), attached hereto as Exhibit 6 and incorporated by reference.⁴ In keeping with Mr. Carpenter's comment, Golder also concludes that based on geologic and hydrogeologic information published by the USGS and local well data, the near-surface aquifer near the mouth of Cottonwood Creek and throughout the northeastern portion of the Sanpete Valley is hydraulically connected to the deeper aquifer system and easily has the capacity to store up to 6,000 acre-feet of water. *See* Golder ASR Memo at 2.⁵ These documents demonstrate that adequate aquifer storage is, in fact, likely to exist, and they confirm that the Bureau was not justified in relying on an unsupported statement in the Sanpete Update to conclude in the SDEIS that aquifer storage was not feasible.

- The second reason the SDEIS gives for rejecting the ASR alternative is that "Direct diversion of flows would require extensive construction of diversion dams and canals within the reservoir basin, potentially negating the avoidance impacts by not building the proposed reservoir." SDEIS at 2-60; *see also* Sanpete Update at 20. Yet there is no substantiation for this vague and broadly stated conclusion, in either the Sanpete Update or the SDEIS, and it is absurd to believe that the system needed to collect and convey water to the Narrows Tunnel would have a footprint remotely as large as the 600-plus acre reservoir, and the dam (in another shortcoming, the SDEIS does not include the size of the dam's footprint), and the 32 acres needed for highway relocation, or that the diversion facilities would come even close to destroying between 90 and 100 acres of wetlands and inundating over 5 miles of stream. In fact, in another section of the SDEIS addressing the "Direct Diversion with Reservoir in Sanpete Valley" alternative, the SDEIS indicates that the facilities required for the direct diversion of up to 5400 acre-feet would consist of a single diversion structure and pump building about 1000 feet downgradient of where SR-264 crosses Gooseberry Creek, an electrical transmission line to the pump station, a single 1000 ft. pipeline and an open canal about 0.8 miles long -- facilities that are hardly comparable in size or impacts to the Narrows dam and reservoir. SDEIS at 2-46 to 2-47. Golder similarly concluded that the facilities that would need to be newly added for the ASR alternative would be relatively small and would produce far fewer impacts than the proposed action. Golder ASR Memo at 11. Again, there was no reasonable, documented basis, in either the SDEIS or the Sanpete Update, for a conclusion that the impacts of a direct flow diversion system in the Gooseberry Basin would be equivalent, or even close to those of the proposed action. The proper and legally required course is to carry the ASR alternative forward in the EIS for detailed analysis, so that the impacts to upper Gooseberry Creek from the diversion works can be

⁴ CWCD hereby incorporates the substance of the Carpenter memorandum into our comments, and requests that the Bureau consider and respond not only to this part of the memo, but also to the other sections which effectively dispute a number of conclusions in the SDEIS.

⁵ As stated in the Golder ASR Memo, "[t]he alluvial fan deposits consist of unconsolidated to semi-consolidated clay, silt, sand, gravel, cobbles and boulders up to 350 feet thick in areas east of Mount Pleasant, coarsening toward the base of the Wasatch Plateau (Robinson, 1971). The aquifer within the alluvial fan deposits in the northeastern portion of the Sanpete Valley is unconfined and the depth to water can range from 10 to 30 feet towards the San Pitch River to approximately 100 feet within the alluvial fans to the east. Transmissivity values for the alluvial fan deposits can range from approximately 13,000 gpd/ft to 1,250,000 gpd/ft (1,000 to 20,000 ft²/day), based on ten aquifer tests and specific capacity data from more than 40 wells (Robinson, 1971)." Golder ASR Memo at 4.

accurately compared with those of the proposed dam and reservoir, including for purposes of the Corps' LEDPA analysis.

- The third reason for dismissing the ASR alternative is that "Water would have to be treated to drinking water standards before injection; or alternately, a large infiltration pond and settling basin, equivalent to a small reservoir, would be required to hold water diverted during spring runoff." SDEIS at 2-60. Again, there is no analysis or substantiation for these conclusions, in either the Sanpete Update or the SDEIS. Further, even assuming that water treatment would be required if injection wells were used for the ASR project (data in the SDEIS for Gooseberry and Cottonwood Creeks indicates that the quality of injected water would actually be very good, *see* Table 3-14), and that such treatment were expensive, the Bureau still must do enough analysis or confirmation to be confident in those conclusions, and then it must make a reasonable estimate of treatment costs for use in an overall cost comparison between ASR and the proposed action. The Bureau cannot simply jump from "the water may need to be treated" to "treatment would be expensive" to "therefore ASR is infeasible." Instead, it must do enough work (or independently review work done by others) to confirm the legal and practical need for treatment, and the likely expense of such treatment, before it can make a comparison to the proposed action and potentially dismiss the injection-based ASR alternative based on a need to treat the injected water.

Even more important is the lack of foundation or explanation in the SDEIS as to why it was appropriate to reject infiltration-based ASR (which is the type of system that was actually suggested by Carbon County interests) on grounds that a "large infiltration pond and settling basin, equivalent to a small reservoir, would be required." Obviously, an infiltration-based ASR system will require infiltration ponds or basins. The SDEIS falls short because it does not even attempt to determine how large the basins would likely be, or to explain why, even if the basins would be "large," that would justify rejecting ASR as an alternative for NEPA or CWA purposes. A "large" infiltration basin or pond located in uplands (perhaps even as large as a "small reservoir," whatever that means) would in almost every case be environmentally preferable to a large, or a medium, or even a small dam and reservoir located in high value wetlands. Thus, a large infiltration basin is not a per se basis to dismiss an otherwise reasonable and practicable alternative that meets the purpose and need. Finally, Golder has done what the Bureau failed to do, by actually estimating the size of the infiltration basins, using conservative estimates of the transmissivity of the underlying alluvial materials, the depth to groundwater, and the required infiltration rate. *See* Golder ASR Memo at 6. The conclusion was that a system using up to 10 infiltration basins of up to 10 acres each (for a maximum total of 100 acres), located in alluvial fans along the edge of the Sanpete Valley, should be sufficient. Its not clear whether the Bureau would consider 100 acres to be a "large" area, but it surely is a much smaller area than the nearly 700 acre footprint of the proposed dam and reservoir, and the infiltration basins would likely be located in well drained uplands in the alluvial fans, not in wetlands and a pristine stream bottom. Again, the proper and legal course of action is to carry the ASR alternative forward as a reasonable alternative so a comparison can be made of the impacts of the infiltration basins versus those of the dam

and reservoir, rather than rejecting it based on vague assertions that the infiltration basins would be too large.

- The fourth and fifth reasons for rejecting the ASR alternative are “the nature and location of available aquifers and apparent separation of bedrock and shallows aquifers poses technical problems” and “high drawdown from the proposed high capacity wells could affect adjacent wells and water rights.” SDEIS at 2-61. Again, the potential fact that a less damaging alternative may “pose technical problems” or “could” affect other wells and water rights does not warrant dismissal. For NEPA, and particularly for LEDPA, there must be solid evidence that the alternative is technically infeasible before it can be dismissed and that burden clearly has not been met by the Bureau here. And again, as already noted above, Golder and Mr. Carpenter have concluded, based on published geologic and well data, and existing and historic water use practices, that the characteristics of the aquifer are indeed suitable for infiltration and withdrawal of sufficient quantities of water, and indeed that similar practices have been informally occurring for years. *See* Golder ASR Memo at 11 (“the published technical data indicate that the proposed [ASR] facility could successfully recharge directly to the aquifer without significant separation between the shallow and deeper aquifers in this portion of the valley.”). Golder further notes that through use of existing wells, and the careful location of the new wells (for purposes of its review, Golder assumes that as many as 12 new wells might be required), it should be possible to avoid unacceptable impacts to other wells and water rights. *Id.* at 11-12. Again, the proper course was not for the Bureau to blindly rely on the Sanpete Update’s conclusions on purported technical challenges, the Bureau should have independently reviewed and verified the available information, including the contradictory comments that were submitted on the draft Sanpete Update but ignored in the final document. Now the Bureau must also consider the Golder ASR Memo.
- We also note that the SDEIS indicates that the Sanpete Update was distributed in draft for public review and comment, and that “following consideration of comments” the Sanpete Update was finalized, which leaves the implication that NEPA-type public involvement process occurred and that the substance of the comments was recognized in the final document. To the contrary, while several substantive comments were submitted that were critical of the draft (including the comments of Mr. Carpenter, as discussed above), and copies of most of those comments were appended to the final Sanpete Update, no attempt was made to respond to or otherwise address these comments, and there were no apparent changes to the final Update based on the comments. If the Bureau is going to rely on the Sanpete Update as the basis for dismissing alternatives, then it must consider and respond to those comments that were made on the draft of that document, and we hereby request that it do so now.

In sum, we believe that the SDEIS improperly relied on the Sanpete Update, without independent verification and review by the Bureau, to reject the ASR alternative. Moreover, it is our position that the Golder ASR Memo and other information outlined above, further demonstrate that the ASR alternative is a reasonable and practicable alternative that needs to be considered in detail in the EIS. As the Golder ASR evidences, the ASR alternative would provide significant benefits

such as a reduction in evaporative losses, a reduction in impacts to water resources and riparian habitat, thus requiring less mitigation, and an overall cost-savings compared to the proposed action. For these reasons, we urge the Bureau to conduct a review of the Golder ASR Memo and the Sanpete Update, and/or conduct its own independent ASR assessment, and/or seek a more detailed assessment of ASR by another entity with ASR expertise. For example, the Utah Geological Survey, which has performed such assessments for other Utah ASR projects⁶, or the U.S. Geological Survey, which has also done such assessments,⁷ would be good candidates for such a review. NEPA strongly encourages agencies to solicit input and analysis from other agencies with special expertise, *see* 40 C.F.R § 1501.6, and there are several such agencies with ASR expertise in Utah that the Bureau could have relied upon instead of blindly accepting the unsupported conclusions of the Sanpete Update.

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c) Inadequate Consideration of Carbon's Offer to Purchase Water Rights and the Resulting Funding Source

In Section 2.3.12, the SDEIS rejects purchase of Sanpete County's water rights by Carbon County water interests as an alternative, on grounds that this proposal does not provide any relief from the purported water shortages in Sanpete County and that the proposal is "infeasible without the presence of both willing sellers and willing buyers." SDEIS at 2-60. While the CWCD is pleased that the SDEIS documents Carbon's repeated offer to purchase all or a part of the Sanpete water right, which still stands, we are disappointed that the SDEIS fails to acknowledge the context and intent of that offer, with the result that the purchase offer is inappropriately trivialized. As made very clear by reading of the SDEIS, the biggest obstacle to Sanpete's obtaining a new late season water supply, under essentially all of the alternatives, is the ability to obtain funding and pay for project construction. Indeed, lack of funding is given as a reason for dismissing most of the alternatives that were not carried forward for detailed evaluation, including those that would not utilize the 5400 acre foot water right.

As Carbon County interests made very clear when they made their offer to purchase Sanpete's water rights, one of the primary purposes was to provide additional funding to Sanpete County to help it afford one of the other less damaging alternatives. In other words, while the SDEIS limits its consideration of potential funding sources to federal and state funds, Carbon's offer comprises another sizeable source of funding that is readily available, and ignored by the SDEIS. To correct this oversight, the alternatives analysis must be redone, taking into account the several million dollars of funding that will be available from Carbon County for any project alternative that does not utilize the Sanpete water right, or utilizes something less than the total water right. Nor can the Bureau avoid taking this funding into account on grounds that Sanpete says it isn't willing to accept the offer. If that were the case, Sanpete could also cause the rejection of other reasonable alternatives that it doesn't find ideal like, by simply saying it would refuse to pursue or accept available project funding, whether it be federal, state, local or even private. Sanpete's refusal to accept a readily available funding source is not a legitimate basis for rejection of an alternative on grounds of economic infeasibility.

⁶ <http://geology.utah.gov/utahgeo/water/index.htm#aquiferstorage>.

⁷ The USGS recently completed a Report assessing the function of the Sand Hollow Reservoir in Washington County, Utah <http://pubs.usgs.gov/sir/2009/5050/pdf/sir2009-5050.pdf>.

Perhaps one of the most natural uses of the money that could be provided by Carbon's purchase of Sanpete's water right would be to purchase water rights in Sanpete Valley to be used in conjunction with an ASR project like the one found feasible by Golder. The SDEIS recognizes that there is considerable excess flow in the streams in northern Sanpete Valley but claims those flows cannot be utilized due to the Cox Decree, which purportedly forbids the use of these excess flows. SDEIS at 2-57. The SDEIS also documents the practice of Sanpete Valley water users to divert and apply excessive water during spring runoff when water is plentiful, in an attempt to maximize soil moisture and sustain crops as long as possible after streamflows have diminished. SDEIS at 3-84. Assuming these claims and assertions are correct, the money received by Sanpete from Carbon for purchase of some or all of the Gooseberry water right could be used to purchase rights in Cottonwood Creek, and other streams along the east side of Sanpete Valley, that could be used during spring runoff (including to capture some of the "excess" water) as a recharge source for an ASR system, in place of water diverted from the Gooseberry drainage and down Cottonwood Creek. Indeed, under this type of approach the infiltration basins could be located near the mouths of several different streams in which water rights have been purchased, reducing or eliminating the need for an expensive pipeline system running along the eastern edge of the Valley, making such an approach even more cost effective. The purchase of groundwater rights in Sanpete Valley could also potentially be used, to the same affect, alone or in conjunction with surface water purchases using funding from Carbon's purchase of the Gooseberry water right. This type of approach would also eliminate or reduce concerns regarding potential channel erosion from added flows under an ASR system that relied exclusively on flows diverted from the Gooseberry drainage down Cottonwood Creek.

Because of the attractiveness of this alternative (ASR using surface water and/or groundwater rights purchased with funds obtained by Carbon's purchase of Sanpete's Gooseberry rights), we ask that it be specifically considered and carried forward for detailed analysis in the EIS, as an alternative that would be reasonable, practicable, and almost certainly the LEDPA.

51-9 **3. The SDEIS Fails to Consider the Impacts of Climate Change and Greenhouse Gas Emissions.**

The SDEIS fails to consider the impacts of climate change on both Carbon and Sanpete Counties. Instead, the SDEIS summarily dismisses any analysis on climate change impacts by concluding, without providing a substantive discussion, that "models have not been developed with sufficient detail or sensitivity to capture small projects such the proposed Narrows Project . . . [and] without verified models addressing climate change at this project level, Reclamation concludes that, at this time, data and modeling tools are not yet developed to the point that meaningful analysis of a small project can be achieved." See SDEIS at 1-25, Issue No. 20. Besides this conclusory and circular statement, the SDEIS has no discussion on climate change. In addition, the SDEIS never addresses nor attempts to quantify the greenhouse gas ("GHG") emissions from the project. These omissions are contrary to law (see *Pacific Coast Federation of Fishermen's Ass'ns v. Gutierrez*, 606 F. Supp. 2d 1122, 1184 (E.D. Cal. 2008)) and agency directives.

The Bureau is required to analyze climate change impacts in NEPA documents pursuant to Secretarial Order No. 3289, dated September 14, 2009, which requires a “Department-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to its impacts on land, water, ocean, fish and wildlife, and cultural heritage resources that the Department manages.” Indeed, the CEQ is also developing guidance on climate change impacts and draft guidance consistent with the Secretarial Order has been issued. This draft guidance provides, in part, that agencies should focus on aspects of climate change that may lead to changes in the impacts, sustainability, vulnerability and design of the proposed action and alternatives.

Based on these directives, the SDEIS must consider climate change in two regards: (1) the relationship and effect of climate change impacts on the proposed action and alternatives, including the relationship to the proposed design, environmental impacts, mitigation and adaptation; and (2) the GHG emissions from the proposed action and alternatives considered. The SDEIS fails on both fronts.

Perhaps most relevant to this Project is the Bureau’s decision to ignore the effects of climate change on the proposed action, given predictions of increased temperature, reduced runoff and increased drought frequency in the southwestern United States. Notably, the Secretarial Order specifically identifies the need to assess climate change impacts on “water management imperatives” because water projects are highly susceptible to climate change impacts. The proposed CEQ guidance shares this view as well. Additionally, climate change impacts are all the more significant when the project has long-term utility and is located in an area considered vulnerable to climate change impacts. The Narrows Project presents exactly these circumstances, thus the Bureau needs to consider climate change impacts in the SDEIS.

To claim that modeling is not sophisticated enough to provide a meaningful analysis for a “small project” is not only inadequate pursuant to NEPA regulations (*see* 40 C.F.R. § 1502.22) but is also simply wrong. In fact, a recent climate change report does just what the Bureau claims cannot be done--assesses the affects of climate change in a small area, in that case Park City, Utah. *See* Stratus Consulting, Inc., *Climate Change in Park City: An Assessment of Climate, Snowpack, and Economic Impacts* (Sept. 29, 2009). The report includes different climate change models to provide a range of future scenarios in which to assess the consequences of potential environmental conditions. Reporting the average of these models, the study predicts future temperature and precipitation effects 20, 40, and 65 years into the future. Following this approach, the study estimates that in 2030 the annual temperatures in the Park City area will rise approximately 3°F and precipitation levels will decrease nearly 3.5%. By 2075, however, the report estimates an average warming of 6.8°F and a decrease by 4.3% in precipitation levels. Accordingly, this report demonstrates that, contrary to the Bureau’s claim, it is possible to model changes in precipitation and temperature gradations associated with climate change. Consequently, the Bureau is obligated to assess climate change predictions for the project area and discuss the subsequent impacts from these changed conditions.

Moreover, preparation of this kind of analysis is fully consistent with other Bureau guidance documents. For example, in a 2007 report by the Bureau’s “Climate Change Technical Work Group”, it was recommended that for Bureau water resource studies and decisions concerned

with greater than a 20-year “look-ahead,” a quantitative sensitivity analysis be conducted on operation responses to projected climate change using technical approaches endorsed by the Work Group. “By comparing system performance using projected climate change hydrology to historical hydrology, useful knowledge about system sensitivity should be ascertained.” *See Climate Technical Work Group Final Report.*⁸ The SDEIS contains what is essentially a “look-ahead” type operations analysis that seeks to determine how the Narrows Project would impact Scofield Reservoir and other downstream resources over the next 45 years (as discussed below, an even longer period should be studied) and so it is the exact type of study contemplated by the Work Group’s guidance.

In addition, the Interior Department and the Forest Service (a cooperating agency on the SDEIS) have considerable climate change expertise, including assessment methodologies that can be used to project future climate trends that are regularly drawn upon by agencies for NEPA purposes. For the Forest Service, this includes the Rocky Mountain Research Station and the Climate Change Research Center.⁹ For Interior agencies like the Bureau, this includes the U.S.G.S. Office of Global Change.¹⁰

Consequently, the Bureau is obligated to assess climate change predictions for the project area and discuss the subsequent impacts from these conditions. To the extent it may need to rely on other federal agency resources that have the expertise with this type of analysis, NEPA requires that the Bureau request and utilize such expertise so a meaningful analysis can be performed.

This obligation is all the more significant because of the nature of the proposed action—a water development project. Therefore, once the Bureau completes its analysis of projected climate change for the area, it must then consider the environmental consequences of those impacts. Among the issues the Bureau must consider are the following:

- Reduced runoff. Warmer temperatures may result in reduced spring runoff as well as an increase in evaporative losses. Both directly impact the availability of water. As the SDEIS notes, water resources are a central environmental issue that must be carefully evaluated in this action. For instance, the SDEIS discusses that impacts to Scofield Reservoir would likely occur during multiple successive drought years, a condition that may result from climate change impacts. Consequently, the SDEIS should include an analysis of how temperature and evaporation changes may impact water resources and water availability.
- 51-10 • Algae blooms. The SDEIS acknowledges the impacts of increased algae blooms and recognizes that Scofield Reservoir, as of 2007, was a mesotrophic system. *See* SDEIS

⁸ This report is available on the Bureau’s website at: <http://www.usbr.gov/lc/region/programs/climate/research.html>. A direct link to the relevant section of the report is available at: <http://www.usbr.gov/lc/region/programs/strategies/FEIS/AppU.pdf>.

⁹ Web links to these resources are as follows: Forest Service Climate Change Research Center: <http://www.fs.fed.us/ccrc/aboutus.shtm>, Rocky Mountain Research Station Climate Change: <http://www.fs.fed.us/rmrs/climate-change/>.

¹⁰ *See* http://www.usgs.gov/global_change/.

at S-15 and 3-46. This data is now outdated and the Bureau should provide a more accurate baseline condition, especially when it notes that “accelerated eutrophication” under the proposed action could degrade the recreation areas. *See* SDEIS at 3-77. In addition, the SDEIS discusses the State’s total daily maximum load (“TMDL”) for Scofield Reservoir which identifies the need for a shift in phytoplankton dominance from blue green algae. Despite the SDEIS’s acknowledgement of the significance of algae blooms, it fails to discuss how these conditions may be exacerbated as a result of future climate change scenarios.

- Evaporative losses. The SDEIS identifies evaporative losses in the Price River drainage as an environmental consequence yet the SDEIS fails to consider what might happen when evaporative losses increase due to warmer temperatures associated with climate change. In addition, the SDEIS discusses the issue of increased salinity levels in the project area and attributes nearly one-third of the increase in salinity levels to reservoir evaporation. SDEIS at 3-116. But again, there is no analysis as to how these consequences will be further exaggerated due to climate change impacts.
- Temperature variations. Changes in temperature, specifically an increase in temperatures, is considered a pollutant (*see* SDEIS at S-16) and directly affects water quality. Significantly, warmer water reduces dissolved oxygen (“DO”) levels which in turn affect fish populations among other things. *See* SDEIS at S-18. However, the SDEIS fails to take into account the environmental consequences of increased temperatures due to climate change impacts in the area.

51-11 In addition, and as an example of the relevance of climate change impacts, the SDEIS currently projects the frequency of Scofield Reservoir being drained to the bottom, *i.e.*, entirely drying up, will increase from 3 times in 43 years to 12 times in 43 years under the proposed action. *See* SDEIS at 3-18. This four-fold increase of likelihood of losing Scofield Reservoir is significant and requires a more thorough analysis in the SDEIS. Moreover, the SDEIS fails to consider how this probability might be further exaggerated in light of increased temperatures and decreased precipitation levels, conditions directly related to climate change impacts. Given the significance of Scofield Reservoir as a water source for municipal, residential, irrigation, and recreational purposes, the Bureau’s oversight is evidence it failed to take the requisite “hard look.” Accordingly, the SDEIS must address the effects of climate change on the availability of water in Scofield Reservoir. For a more detailed discussion and comment on water resources in the project area generally, *see also* Comment 7 below.

51-12 Lastly, nowhere does the SDEIS discuss the potential for GHG emissions from the proposed action or the alternatives. While the Project may be of relatively “small scale,” constructing a dam that is 120’ high with a crest length of 550’ and crest width of 30’ is not insignificant. In addition, the proposed action also includes the construction of a trans-mountain diversion, rehabilitating the Narrows Tunnel, relocating SR-264, and modifying and constructing recreation facilities. GHGs will be emitted from these construction activities, thus the Bureau is required to, at a minimum, provide an estimate of these emissions in light of the sizable construction activities that will be necessary to build this Project.

51-13 **4. The SDEIS's Discussion of Project Funding is Confusing and Inadequate and There is No Demonstration that the Proposed Action Itself Meets the Funding Criteria.**

The cost and financing description in the SDEIS is inadequate because it is confusing and provides insufficient information or details about the financing of the proposed project or the alternatives. This is all the more significant in light of the fact that the Bureau relies on compliance with SRPA financing requirements as a criterion to screen out otherwise reasonable NEPA alternatives. See SDEIS at 2-1. If receiving SRPA monies is going to serve as the basis for considering and/or eliminating alternatives, as was the case here (as discussed in the DEIS Comments, this is an impermissible screening criteria that makes the "purpose and need" statement too narrow to satisfy NEPA and CWA), the SDEIS is required to provide a thorough analysis, in "plain English" (not Bureau jargon) of the funding and repayment aspects of the proposed action and each alternative.

For example, the "selection criteria" used in the SDEIS to determine which alternatives were reasonable include a SRPA-based requirement that the project must demonstrate that it is "financially feasible," which is to be determined by the following factors: (1) the project sponsor must pay a minimum of 25% of the project costs; (2) the loan repayment must use 100% of the project's irrigation amortization capacity and must be repaid within 40 years or less; and (3) the loan factor must be 0.5 or less. SDEIS at 2-2. Because an alternative must satisfy these requirements in order to be considered in the EIS, it obviously must be demonstrated that the proposed action itself meets these requirements. Yet, the only discussion of the costs and financing of the proposed project is found in section 2.2.2.3, where the SDEIS simply states the proposed action would cost approximately \$40.3 million and would be "funded by SWCD, the State of Utah, and a loan from the Federal Government;" that about \$7.6 million of that amount would be "allocated to fish and wildlife enhancement" and that "these costs" (unclear what "these" refers to) would be "nonreimbursable to the project sponsor" (example of more Bureau jargon). A final sentence then states, in seeming contradiction with everything before it, that "Total financing would be through provisions of the SPRA [sic]." SDEIS at 2-31.

In addition to being totally confusing, this language certainly does not demonstrate whether or how the sponsor (SWCD) will meet the SRPA eligibility requirements, *i.e.*, there is nothing to explain whether the sponsor will actually pay 25% of the cost and how they will do that; and nothing explains the repayment terms of the loan and whether and how it can be repaid in 40 years. There is also no discussion of whether the State of Utah has actually committed to pay a share of the cost, and if so in what amount and from what source. Yet, despite the lack of this information, and the lack of a showing that the proposed action is financially feasible under either the oddly formulated SRPA definition or a more typical definition, the Bureau nevertheless disregards other alternatives based on the fact that they do not, or may not, meet the funding criteria. See, *e.g.*, the Valley Damsite alternative, SDEIS at 2-53 (describing the reasons this alternative was eliminated from further consideration). This severely limited discussion not only fails the "hard look" requirement of NEPA, but it also strongly suggests that the proposed action does not meet the very criteria that were used to reject other alternatives from consideration in the SDEIS.

In addition to these concerns, the SDEIS is confusing and contradictory in its statements. For instance, the Bureau rejects the Direct Diversion with Reservoir in Sanpete Valley Alternative (“Direct Diversion alternative”) because it would not be eligible for state or federal grants because it does not provide for carryover storage, or recreation or fish and wildlife benefits. However, there is no explanation as to why this alternative would be ineligible for state or federal funding. Or stated otherwise, there is nothing in the proposed action which explains why *the proposed action would be eligible* for these state and federal grants even though other alternatives are not. Even more confusing is that this alternative was dismissed because the total project cost would be nearly \$50 million “or about \$18.4 million higher than the Proposed Action.” See SDEIS at 2-47. The math simply does not add up. The proposed action is estimated to cost nearly \$40.3 million which is not \$18.4 million less than \$50 million—the estimated cost of the Direct Diversion alternative. These are just a few examples of how the SDEIS is confusing and how it fails to provide the requisite analysis.

The Bureau must go back and start over and write an understandable explanation of project costs, funding sources (grants and loans), repayment amounts and terms, and explain the ability of the project sponsor to obtain and repay all of the estimated costs for the proposed action. Only then can the Bureau determine if the proposed action is itself financially feasible, and if so, make a legitimate comparison with other potential alternatives.

51-14 **5. The Cost Estimate in the SDEIS is Flawed.**

The accuracy of the cost estimates for the proposed action and alternatives are unusually important for purposes of the Narrows Project EIS, for several reasons. First, according to the SDEIS, a project is not eligible for funding under the SRPA if the total project cost would exceed \$50 million. SDEIS at 2-58. The SDEIS further provides that if an alternative is not eligible for SRPA funding, it is considered financially infeasible and therefore screened from consideration in the SDEIS. See SDEIS at 2-2; 2-58. Indeed, the SDEIS screened one alternative from detailed consideration because its estimated cost was in excess of this \$50 million SRPA funding eligibility threshold and it screened several others out due to purported inconsistencies with other SRPA eligibility requirements, *e.g.*, SWCD’s purported inability to meet SRPA repayment obligations. See for example, SDEIS at 2-47 (dismissing the Direct Diversion alternative because “the sponsor lacks resources to meet SRPA cost-sharing requirements.”)

Since the primary reason the Bureau is preparing the Narrows EIS is to determine whether to approve an SRPA loan application for Sanpete’s proposed project, the Bureau must do a detailed, objective, and if anything conservatively high cost estimate of the proposed project (and the other alternatives) to confirm that the proposed project is indeed eligible for SRPA funding. In effect, the Bureau has the burden of demonstrating conclusively that the proposed action will cost less than \$50 million and that all other SRPA eligibility criteria (including ability to repay) are met, otherwise there is simply no legitimate basis for the Bureau to prepare the EIS.

Second, and as noted above, the SDEIS alternatives analysis must meet not only NEPA “reasonable alternative” requirements, but also the requirements of the CWA Section 404 LEDPA analysis. Under the LEDPA analysis, cost can be a legitimate factor in the determination of whether a less environmentally damaging alternative is practicable, but that

determination requires that there be an accurate cost estimate, of both the proposed action and the less environmentally damaging alternatives, and cost is a screen-out factor for only a less damaging alternative if it is “extraordinary.” The lack of accurate, reproducible cost estimates, with adequate support in the record is grounds for invalidation of an EIS, particularly where a Section 404 permit is involved. *See Utahns for Better Transp. v. Dep’t of Transp.*, 305 F.3d 1152, 1187 (10th Cir. 2002).

Third, the SDEIS includes an assessment of the per-acre foot capital cost of water for the proposed action and other detailed alternatives, which is then used to compare among the alternatives. SDEIS at 2-31. Because cost per-acre foot is an important comparison indicator (and should also have been applied to some of the alternatives that were wrongfully screened out), it is essential that the overall construction cost estimates be accurate and well documented.

Having demonstrated the critical importance of having accurate, comprehensive, and if anything conservatively high project cost estimates in the SDEIS, we now explain why CWCD believes the \$40.3 million cost estimate for the proposed action in the SDEIS (and likely the cost estimates for the mid-sized and small-sized project alternatives as well) is significantly underestimated. *See* SDEIS Table 2-5 (Narrows Project Cost Comparison of Storage Alternatives Evaluated in Detail.)

First, as discussed further below, the SDEIS wrongly assumes that the maximum credible seismic event (“MCE”) for purposes of the Narrows Project design is an earthquake of magnitude 5.5 on the Richter scale. As explained in the DEIS Comments, and as further expanded upon below, there is no reason to believe this estimate is accurate. Notably, the Bureau concluded that for the Scofield Dam the MCE is 7.5, which is 100 times larger than the 5.5 MCE used here. Yet, the Narrows Dam site is only about 12 miles away from the Scofield dam site, and it is several miles closer to the Joes Valley Fault (the source of the 7.5 MCE for purposes of the Scofield Dam) than the Scofield site. (This is just one of many examples of outdated and unverified information in the SDEIS). The Bureau must assume that the design MCE for the Narrows Project is at least 7.5, and perform the necessary analysis (including additional field work to better characterize the underlying foundation materials) to determine the design features needed to safely withstand this MCE, and then do an objective and complete cost estimate based on that information, and after these revisions are complete, the Bureau must then determine whether the project is SRPA eligible and, if so, redo the EIS alternatives analysis to reflect these more accurate costs.

The second reason we believe the cost estimate is far too low is the much higher cost estimate contained in the Sanpete Update, a document that the Bureau relies upon elsewhere in the SDEIS but has conveniently chosen to ignore for purposes of the cost estimate. The Sanpete Update estimates that the proposed action would cost just over \$59 million (in 2008 dollars), plus the costs of engineering, contract administration, land acquisition, permitting, environmental documentation and mitigation, which are not estimated, but no doubt would add many millions of dollars. *See* Sanpete Update at 22. Golder now estimates the more likely cost for the proposed action is well over \$70 million. *See* Golder ASR Memo at Table 2.

This much higher cost estimate, and the fact that it is contained in a document which the Bureau relies upon for other aspects of the SDEIS, provides yet another reason the Bureau must prepare

an updated, accurate project cost estimate that accounts for the higher design MCE, and then explain any differences between that revised estimate as compared with the estimate included in the Sanpete Update. Only then can the Bureau determine SRPA eligibility, and only then can it provide a legally defensible NEPA and CWA Section 404 alternatives analysis.

51-15

6. The SDEIS's Seismic Analysis is Flawed and Outdated.

In Section 3.15.1, the SDEIS repeats virtually verbatim the language and conclusions of the 1998 DEIS which states that based on "preliminary studies," the MCE for the Narrows Project is magnitude 5.5, and that accordingly "geologic hazards are not of notable concern" and "from a geoseismic standpoint the . . . damsite is suitable for construction." SDEIS at 3-102. Yet again, the SDEIS has simply ignored the DEIS Comments, which explained why an MCE of 5.5 was far too small, particularly when the Bureau used an MCE of 7.5 when it required an upgrade of the nearby Scofield Reservoir, which is actually further from the Joes Valley Fault system (one of the sources of the 7.5 MCE for Scofield) than the Narrows dam site.

In order to further confirm whether the seismic analysis in the SDEIS is adequate, the CWCD retained a seismic expert, Mr. Don East of Golder Associates, to review the relevant portions of the SDEIS. Mr. East also reviewed relevant portions of documents that were associated with the seismic upgrade of the Scofield Dam. Golder's review, in the form of a technical memorandum, is attached hereto as Exhibit 7, and we ask that it be reviewed, considered, and responded to in the new EIS supplement that we believe the Bureau must prepare. In addition, a brief professional resume for Mr. East is also attached as Exhibit 8.

The following summarizes some of Golder's conclusions:

- There is no apparent additional seismic information or analysis in the SDEIS, beyond that contained in the 1998 DEIS. Much more technical information regarding the tectonics and seismic hazards of the Wasatch Plateau has become available since 1998 (*e.g.*, U.S. Geological Survey 2006, Quaternary Fault and Fold Database for the United States). A dam is a critical structure and its seismic design and seismic hazard evaluation should be based on current, and the most up-to-date information on the active tectonics, potential seismogenic sources and seismic hazards in its region.
- The discussions of seismic hazards and seismic design in the SDEIS do not address or reflect the seismic design requirements of either Utah or federal law, which outline the processes of seismic design and evaluation for dams, and list the types of investigations and analyses that should be completed in order to develop deterministic seismic design parameters. No detailed or comprehensive site-specific seismic hazard assessments and evaluations (as required by federal and state law) appear to have been carried out for the dam site. There is no clear description of what type of assessment (*e.g.*, deterministic or probabilistic) is being used to develop the seismic design parameters.
- The SDEIS has no criteria for what constitutes an active fault that must be considered in seismic design. Federal and Utah guidelines indicate an active or capable fault is one that demonstrates "movement at or near the ground surface at least once within the past

35,000 years,” and federal guidelines further note that “for high-hazard potential dams, movement of faults within the range of 35,000 to 100,000 years BP [before present] is considered recent enough to warrant ‘active’ or ‘capable’ classification.” Also, dePolo and Slemmons (1998) recommend that for faults in the extensional Basin and Range Province, a latest Pleistocene, 130,000-year activity criterion be used because of the long recurrence intervals of these faults. The Narrows Dam project is within the extensional tectonic transition zone between the Basin and Range on the west and the Colorado Plateau on the east.

- If a 30,000-, 100,000-, or 130,000-year activity criterion is invoked for the Narrows Dam project, the Gooseberry Graben faults, which are late Quaternary and within 1 km (0.6 mi) of the dam, may be potential seismogenic sources that should be studied, evaluated and considered in site seismic design. This would result in the use of high design ground motions, and would introduce the potential for surface fault rupture at the dam. Currently, neither the fault nor the potential for surface rupture is considered in site seismic design as described in the SDEIS. It also that no fault-specific paleoseismic studies were done on the Gooseberry Graben faults, or other nearby active and potentially active faults in order to dismiss them as potential seismogenic sources.
- The SDEIS implies there are no active faults near the site that could influence seismic hazards and thus seismic design, and concludes that the “random” earthquake (a magnitude 5.5) controls earthquake ground motions at the site. However, the U.S.G.S. Quaternary Fault and Fold Database indicates there are six active and potentially active faults (*i.e.*, may have had at least one movement event in the past 35,000 years) within about 46 km (28 mi.) of the proposed dam site. Three of these faults are within 12 km (7 mi) of the dam site, and one is as close as about 1 km (0.6 mi) from the dam site.
- The Bureau’s seismic design for the nearby Scofield Dam considered the Pleasant Valley and Joes Valley fault zones as active faults capable of generating MCEs of surface wave magnitude 7.0 and 7.5 respectively. Neither of these earthquake sources is addressed in the SDEIS. The seismic design of the Scofield Dam also considered the random or background earthquake to be a local magnitude (ML) 6.5, while the SDEIS states that the random earthquake is magnitude 5.5. Because the site of the proposed Narrows Project is closer to the Joes Valley fault zone than the Scofield Dam, there is no apparent justification for a design MCE for the Narrows Project smaller than 7.5.
- Based on applicable criteria, and considering the seismic hazard and design studies for the Scofield Dam project, the six potential seismogenic sources within 46 km (28 mi) of the Narrows dam site could produce large potential design earthquakes (*e.g.*, magnitudes of 6.8 to 7.5). Using these earthquake magnitudes, and current New Generation Attenuation earthquake attenuation relationships, results in potentially high earthquake ground motions (*e.g.*, mean PGA > 0.45 g) at the Narrows Dam site. The presence of a potentially active fault at the dam site (the Gooseberry Graben faults) also indicates a potential for surface fault rupture through the dam and facility foundations.

- Utah seismic design requirements state that the random or background earthquake to be considered should have a minimum magnitude of 6.5, and that the PGA developed for the background earthquake be taken from the seismic hazard mapping for Utah titled “Peak Accelerations (%g) with 5,000 Year Return Time, no fault-specific sources”. This seismic hazard mapping indicates that the PGA from just a random or background earthquake could range from 0.30 to 0.40 g.
- The SDEIS does not address or discuss the potential for soil liquefaction induced by earthquake shaking and it does not address the potential for earthquake-induced landslides to affect the reservoir, or other facilities of the proposed alternatives.
- Overall, the tectonic setting is not well described in the SDEIS, appropriate identification, characterization and evaluation of significant potential seismogenic sources at the site (*e.g.*, the Gooseberry Graben faults) and in the vicinity of the site (*e.g.*, Pleasant Valley, Joes Valley, Gunnison and Wasatch faults) is lacking, and the identification and description of potential earthquake hazards is incomplete (*e.g.*, the potential for liquefaction, surface fault rupture and earthquake-induced landslides into the reservoir are not addressed). The development of the seismic design parameters is cursory, conflicting and inadequate resulting in a seismic design that is less than it should be.
- While the SDEIS is an environmental document, and not a design document, it should nevertheless provide an adequate and complete treatment of seismic hazards and the proposed seismic design that assures that the EIS cost estimates are accurate, and provide sufficient information to agency decision-makers and the public to assure that they understand the seismic setting, potential hazards and risks, and the potential for related environmental impacts. Such information is lacking in this document.
- If the seismic hazard assessment and seismic design were performed in accordance with current standard of professional practice, it is likely that the costs for alternatives involving dams at the Narrows site would increase significantly because of increased cost of site-specific hazard identification, characterization, evaluation and design, and the additional cost of permitting, and construction to accommodate a higher PGA, and required provisions to investigate for, and protect against surface fault rupture.

Based on Golder’s technical review, and on the DEIS Comments, it is clear that the Bureau should have, and now must, reassess the MCE and the seismic risks for the Narrows Project, using up-to-date methodology and information, and including the results of the additional field studies that are required. Unless and until this is done, it cannot be known whether the proposed site of the Narrows Project is suitable for a dam, or what kind of risks the dam would pose to the downstream environment, including people and structures (*e.g.*, Scofield Dam and Reservoir, and the cabins and people residing there). Further, as explained above, it is particularly important for the Narrows Project that accurate MCE and ground movement projections be developed, and then taken into account for purposes of project design, so that an accurate cost estimate can be determined.

51-16

7. The Analysis of Impacts on Carbon County Water Resources is Flawed, Incomplete and Outdated.

Section 3.3 of the SDEIS contains an assessment of projected effects on water resources if the proposed Narrows Project (or one of the smaller project alternatives) is constructed. This assessment is not only outdated, it is also incomplete and badly flawed, particularly with respect to assessment of impacts on Carbon County water users and on environmental and other resources downstream of the proposed Narrows Dam. In addition to the criticisms of the water resource analysis in the DEIS Comments, we make the following points.

- First, there is no apparent recognition in the SDEIS of the dam operations analysis by Robert Murdock that was attached to and summarized in the DEIS Comments. The DEIS included an operations analysis based on the period from 1960 to 1992, and concluded that with the Narrows Reservoir in place, Scofield Reservoir would have been drained to the bottom of active storage in 9 of the 33 years simulated. While that is certainly a very significant impact, Murdock's analysis, which utilized data going back to 1946, concluded not only that the reservoir would be drained to the bottom of active storage in 14 of the 48 years studied (nearly 30% of the time), but also that in several of those years, there would be so little water that a large portion of normal releases to satisfy water demands would not occur. DEIS Comments at 58-59. Despite this comment on the DEIS, the Bureau failed to incorporate the readily available data, from the period 1946 to 1960, into its operations analysis, or to otherwise recognize Murdock's work, including additional concerns regarding the failure of the DEIS to account for the depletions that would occur during the time the Narrows Reservoir is being filled. These oversights and errors must be corrected. There is no justification for ignoring readily available data and analysis that is important for accurately assessing impacts. We request that Murdock's work and comments be fully considered and incorporated into the EIS.
- Second, while the operations analysis in SDEIS has been modified and partially updated, by adding data from the ten-year period between 1992 and 2002, it stops there and fails to include the available data from 2002 to 2010, and thus is far out of date. Moreover, by including the data from 1992 to 2002, which was a very wet period with high runoff, and excluding the data from 2002 to 2010, which was generally very dry and included several back-to-back years of very low runoff, the analysis is badly skewed. That error, together with the exclusion of the 1946 to 1960 data, another generally dry period, results in a misleading and incomplete assessment of impacts on Scofield Reservoir, which are almost certainly much worse than portrayed in the SDEIS. This is extremely important, because the SDEIS already concludes that in 12 of the 43 years studied, Scofield would be drained to the bottom of active storage. We expect that when the 23 years of missing data is included in the analysis, as it must be, it will make a material difference not only in this important statistic, but also in all of the impact indicators in the SDEIS, *e.g.*, magnitude of average flow reductions in Gooseberry Creek, Fish Creek, the Price River and downstream; magnitude of average, maximum and minimum depletions to the Price River drainage; reduced amount of annual Scofield Reservoir storage and release; greater reductions in size of Scofield surface area, etc.). These differences, in turn, would ripple through the other resource and impact areas in the SDEIS (*e.g.*, impacts to downstream

water users; decreased water quality and increased need for water treatment; impacts to fisheries and riparian zones; and impacts to recreation at Scofield Reservoir, etc.). In order to ensure that the EIS impacts analysis is accurate and up to date, and provides meaningful information to the public and decision-makers, the water resources analysis must incorporate the data from 1946 to 1960, and from 2002 to 2010, and resulting changes in impacts to the other affected resources, based on this new information, must also be reviewed and revised as appropriate.

- Third, the water resources analysis fails to take account of expected future changes in climate, a very important omission given the likelihood of reduced snowpack and runoff and increased temperature that is projected to occur over the coming decades. As explained above, Interior Department policy and other legal and practical considerations require the Bureau to analyze and take account the expected changes in climate in their planning and NEPA documents, particularly when considering long-term water resource issues. The SDEIS at least partially recognizes the importance of taking a long-term look at the water resource impacts of the Narrows Project, as reflected in the 43-year look-back period that is essentially used to predict what the future impacts to water resources, and water dependent environmental resources, might be over the coming decades – if the Narrows Project is built, the impacts to Carbon County will essentially be permanent. (As noted above, the Bureau should also have included the additional 23 years of available data, for an even longer and more representative period of 60-plus years.) Consistent with that general approach, the Bureau’s analysis of projected water resource impacts from the Narrows Project must include consideration of the changes in climate that are predicted to occur during the coming decades, or it certainly will underestimate the impacts to water resources and other related resources in Carbon County. To appropriately account for this factor, the Bureau needs to determine the likely changes in snowpack, spring runoff, and temperature over at least the next 60 to 70 years, using available climate change models and assessment tools (most of which conveniently include modeling horizons in the 50 – 90 year range), and then apply those changes to the operational and impact analysis in the EIS. As indicated in the climate change discussion above, this type of analysis is capable of being done (a similar analysis was recently completed for the Park City area) and will likely show significant reductions in snowpack and spring runoff, and significant increases in temperature (which will affect evaporation and water quality). These trends and values need to be factored into the six operational studies listed on pages 3-11 to 3-12 of the SDEIS, which should then be revised (or supplemented to include one or more “climate change” scenarios), and these results would need to be factored into the impact assessment for water resources and the various water-dependent environmental resources.
- Finally, the SDEIS analysis of water resource impacts is deficient because it fails to assess or quantify what are the truly relevant, important effects of the reduced water availability due to the Narrows Project on the citizens and water users in Carbon County. The SDEIS makes estimates of the average depletions in the Price River drainage, the average total contents of Scofield Reservoir, the number of times over the next 43 years that the Scofield Reservoir might be drained to the bottom of active storage (at least 12). And it notes that “impacts to regulated releases from Scofield would occur . . . during

multiple successive drought years, such as occurred in the early 1960s, 1990s and 2000s.” SDEIS at 3-16 to 3-17. Those are important statistics and conclusions, but what is even more important, and what NEPA certainly requires, is an analysis and description of what the consequences will be, to the citizens and water users in Carbon County, of the depletion and shortage and drought events that are projected to occur. For example, when the multiple successive drought years occur, causing the Scofield Reservoir to be drained below its active storage for an extended period of time (much longer than it ever has in the past), what will the impacts be to Carbon County?

- Will there be any municipal water available in Price and the surrounding area, for drinking and bathing? What will the quality of that water be, and what additional water treatment might be required?
- Will the Carbon Power Plant have cooling water, or will it need to limit operations or even shut down?
- Will the coal mines that depend on Scofield water have to cease or limit operations? (All in the name of providing an extra crop of hay in Sanpete County?)
- And how will these impacts be exacerbated by climate change?

In the absence of such analysis, the fundamental goal of NEPA – to disclose the impacts of proposed action on the human environment – is not met. The Bureau must do an assessment of the actual, human (and economic) impacts of the depletions it predicts will occur in the Price River drainage and the shortages it predicts will occur in Scofield Reservoir storage (after those predictions are updated and adjusted to account for the additional available historic data and projected changes in climate). Unless and until such an analysis is done, the EIS for the Narrows Project will remain deficient.

8. The SDEIS’ Wetlands and Other Waters Analysis is Inadequate with Respect to both NEPA and § 404 Permitting Requirements.

- 51-17 The overall objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the nation’s waters. The SDEIS and 404 Permit Application establish that the Narrows Dam and Reservoir Project and associated infrastructure (the “Project”) would impact approximately 89 acres of waters of the United States, including wetlands (and referred to collectively as “waters”). In this era of evolved water management options, the Project’s impacts on waters reflect a particularly stark inconsistency with the CWA.

The Corps and EPA have repeatedly affirmed (as a fundamental pretext to compliance with the CWA 404 permitting obligations under the 404(b)(1) guidelines) that impacts to waters must be first avoided and then minimized and that compensatory mitigation should be used only for impacts that cannot be avoided or minimized. *See generally* 40 C.F.R. Part 230; 73 Fed. Reg. 19594, 19619 (April 10, 2008) (preamble to mitigation rule clarifying that avoidance and minimization are achieved through application of the 404(b)(1) guidelines). The SDEIS fails to document the Project’s consistency with these Corps/EPA sequencing requirements. Instead, the SDEIS appears to restate many of the same, unsupported themes identified in the 1998 DEIS; it does not acknowledge or address many of the earlier comments (which have been incorporated

herein by reference and attached as Exh. 1) and disregards the substantive changes to waters permitting and mitigation that post-date the 1998 DEIS. *See generally* Exhs. 1 and 2.

The following waters-related comments are not intended to retrace all the themes and issues raised in the DEIS Comments. Instead, these comments supplement the same and provide additional, current examples of the failure of the SDEIS to appropriately assess the impacts of the Project on waters. These comments focus on (1) the lack of adequate information identifying the nature and extent of Project-related impacts to waters; and (2) the archaic (and incomplete) nature of the mitigation assessment particularly evident when comparing the SDEIS and 404 permit application information with the recent Corps' rulemaking addressing mitigation.

We are aware that NEPA does not require that a final, approved waters mitigation plan be in place prior to finalization of an EIS. NEPA does require, however, that an EIS include more than a speculative assessment of the effectiveness of proposed mitigation, *see Wyoming Outdoor Council v. Corps of Eng'rs*, 351 F. Supp. 2d 1232 (D. Wyo. 2005) (citing numerous Ninth and Tenth Circuit cases documenting need for informative mitigation specifics), which of course requires that the EIS contain sufficient information regarding the nature and extent of the waters impacts, and also the nature and extent of the offsetting mitigation, to allow such assessment.

51-18 The Narrows SDEIS contains no assessment of the effectiveness of mitigation for wetland impacts (or any other impact), nor does it contain nearly enough information regarding the nature and magnitude of the impacts to waters to allow such an assessment, as explained below.

Nature and Extent of Project-Related Impacts to Waters. The inconsistency in the 404 Permit Application and SDEIS assessment of the nature and extent of waters and Project-related impacts undermines efforts to comprehend or verify the same. The confusion begins with the myriad inconsistent references to jurisdictional assessments.

The 404 Permit Application establishes that wetland acreages were estimated based on aerial photography followed by a 2003 delineation determining "that the actual wetland acreage was likely 29% less than previously determined." 404 Permit Application at 9 (emphasis added). On the other hand, the SDEIS indicates that a delineation for the reservoir site was completed in 1991-1992 and a "wetlands delineation verification" performed for a "portion of the area within the proposed Narrows Reservoir" in 2003 verified by the Corps in 2004 and again in 2009. SDEIS at 3-63. The confusion regarding the delineation information (and which version represents the foundation for assessing the nature and extent of Project-related impacts to waters) is exacerbated by a post-SDEIS and post-404 Permit Application preliminary jurisdictional determination ("JD") (dated January 12, 2010 and issued by the Corps' Jason Gipson). This "new" preliminary JD refers to "approximately 83.66-acres of wetlands and 5.44-acres of other water bodies present within the survey area." The 2010 preliminary JD information appears to follow-up on the information submitted in 2009 (and referenced in the SDEIS as previously submitted in 2004) covering the area that would be inundated by the proposed reservoir.¹¹ The apparent scope of the preliminary JD indicates that other Project-related impacts to waters (*i.e.*, those not related to inundation) have not been covered by the preliminary JD thereby raising

¹¹ Schematics supporting the preliminary JD confirm it is limited to the proposed reservoir area.

questions as to how those impacts have been evaluated and whether the relevant information is current and accurate.¹²

The information in the 404 Permit Application is also internally inconsistent. The text of the application indicates that the “actual acreage of wetlands to be impacted by the dam and reservoir is approximately 71 acres [and that] 100 acres of wetlands will be mitigated.” 404 Permit Application at 9. In contrast, Table 1 of the 404 Permit Application indicates that the dam construction will permanently impact: 0.9 acre of wetlands and 810 feet of perennial streams; and that the reservoir inundation will permanently impact 83.66 acres of wetlands and 5.44 acres and 39,297 feet of perennial and intermittent streams. In other words, the narrative and corresponding Table in the application are inconsistent. *See also* 404 Permit Application at 18 (referencing “71 acres of wetlands will be affected by the construction of the Narrows Reservoir”).

References to Project-related impacts on non-wetland waters are also inconsistent and vague. The 404 Permit Application identifies impacts to those waters (both temporary and permanent) associated with the Oak Creek and East Bench Pipelines and numerous pipeline drainage and ditch crossings. *See* 404 Permit Application at Table 1. By comparison, the SDEIS references impacts of the Project as “most pronounced near the reservoir”, *i.e.*, the 1 mile of Upper Gooseberry Creek and the 4.3 miles of small streams in the proposed reservoir basin along with possible impacts to Cottonwood Creek associated with the construction of the discharge structure at the end of the Upper Cottonwood Creek Pipeline. *See, e.g.*, SDEIS at 3-16; 3-65. The SDEIS contains virtually no reference to the other pipeline-related impacts.¹³ Since all phases of the project should be assessed in the SDEIS, the hodgepodge of references divided between the 404 Permit Application and the SDEIS undermine an accurate understanding of the Project’s impacts on jurisdictional waters, are inconsistent with the corresponding NEPA obligations and fail to provide a proper foundation for 404 permit issuance.

51-19 Mitigation Rule Clarifications. Whereas the Corps’ 2008 rulemaking on compensatory mitigation reaffirmed some of the concepts fundamental to Section 404 CWA permitting, it also clarified aspects of the permitting program’s mitigation requirements. 73 Fed. Reg. 19594 (April 10, 2008) (referred to as the “mitigation rule”). In addition to confirming the above-referenced sequencing requirements under the 404(b)(1) guidelines, the mitigation rule further specified: (1) the detail essential for mitigation planning; (2) the requirement to assess mitigation from a function and services perspective; and (3) the importance of watershed planning. These key

¹² Notably, issuance of a preliminary JD should not, in a project of this size and scope be deemed adequate to support 404 Permit issuance. The Corps has recognized, in its Regulatory Guidance Letter (“RGL”) addressing preliminary JDs, that “[g]enerally, approved JDs should be used to support individual permit applications, but the applicant should be made aware of his or her option to elect to use a preliminary JD wherever the applicant feels doing so is in his or her best interest.” 08-02 at Para. 4.h. (June 26, 2008) (emphasis added).

¹³ The incomplete, superficial nature of the information in the SDEIS is particularly troubling in that the 404 permit Application specifies “the SDEIS provides a far greater level of detail about the impacts [from the Project] with the exception of the discussion of impacts due to stream crossings . . . Please refer to the SDEIS if greater detail is needed.” 404 Permit Application at 7 (emphasis added). The 404 Permit Application can’t “supplement” the SDEIS. Clearly, information missing from the SDEIS but incorporated into the 404 Permit Application has not been adequately assessed in the overall analysis of environmental impacts.

components of mitigation are disregarded in both the SDEIS and 404 Permit Application. Each of these issues is further addressed below.

Inadequate Mitigation Detail. The mitigation rule requires that “[b]efore an individual permit can be issued, a final mitigation plan must be approved by the district engineer. . . [and that] mitigation plans need to be sufficiently detailed to demonstrate [compliance with the rules]” 73 Fed. Reg. at 19641. The planning and documentation requirements in the mitigation rules are particularly detailed and specifically include twelve required components aimed at ensuring consistency and comprehensive mitigation planning. 33 C.F.R. § 332.4(c). In contrast, the SDEIS discussion of the four alternative potential Project mitigation sites is missing information essential to assess the adequacy of the same.¹⁴ For example, Section 2.2.2.2.4.1 identifies a Mud Creek mitigation project as the mitigation alternative with the “highest priority.” Despite that assertion, the SDEIS contains no information demonstrating the site’s viability as a mitigation alternative. The following provides five examples of the lack of information necessary to evaluate whether the preferred Mud Creek location can support adequate mitigation.

First, the reader is unable to assess the exact location of the project. Figure 8 depicts the “Proposed Alternative Wetlands Mitigation Area” on such a gross scale, it is impossible to evaluate its definitive location. Second, it is not clear the mitigation sites (wherever they are) will be available. The 404 Permit Application acknowledges that this mitigation alternative would require “the purchase of private land adjacent to Mud Creek, south of the town of Scofield.” 404 Permit Application at 18-19. *See also* SDEIS at 3-66 (indicating that “[t]his measure would entail purchasing about 220 acres of private land”). Third, the SDEIS, by its own terms, recognizes that a preliminary study has to be done to evaluate whether the proposed design concept will even work. SDEIS at 2-22; 2-26. It references possible reliance on spring sources or Mud Creek as the hydrology for wetland mitigation but includes no evidence that those sources are available or adequate to accomplish the mitigation objectives. Despite missing that basic information, the SDEIS baldly asserts that “[a]ll or a portion of the required mitigation could be performed at this site.”¹⁵ SDEIS at 2-26. Fourth, the 404 Permit Application refers to the appended Figure 6 which includes a different gross scale map of potential mitigation areas; the Mud Creek mitigation site in the 404 Permit Application appears to be different from the site proposed and “assessed” in the SDEIS. 404 Permit Application at 18-19. Fifth, the 404 Permit Application indicates that the necessary 100 acres of wetland mitigation may not all occur at the site and it depends on the “availability of property north of the town of Scofield.” That parcel (also depicted on the referenced application figure) does not appear in any references in the SDEIS.¹⁶ It is, therefore, impossible for the reader to understand how the SDEIS can accurately assess mitigation when fundamental aspects of the same are not even mentioned. In summary,

¹⁴ The “Wetland Measures” section is improperly incorporated into the Alternatives provisions of Chapter 2. The referenced section does not, however, provide any information related to avoidance and minimization, i.e., essential steps that need to be employed as a precondition of the referenced impacts.

¹⁵ Incredibly, the mitigation costs assessed relative to the project have not been updated since the October 1994 Fish and Wildlife Coordination Act Report (incorporated in Appendix D of the SDEIS).

¹⁶ Similarly, the 404 Permit Application includes additional references to stream mitigation, information not detailed in the SDEIS. For example, Table 4 indicates that 6.5 miles of stream length of Mud Creek will be mitigated. 404 Permit Application at 21. This information is not supported with any specific assessment of the nature and extent of that mitigation and the location, ownership or availability of the referenced stream segments.

the Mud Creek mitigation description in the SDEIS is nothing more than a summary paragraph with no factual foundation and is inadequate for purposes of NEPA compliance and will not support 404 Permit issuance.

The three other wetland mitigation options echo the information provided in the 1998 DEIS and have similar shortcomings to those identified for the Mud Creek site. Despite comments on the DEIS raising questions regarding, among other things, the availability of the sites and the lack of any information to support the notion that those sites would adequately mitigate the impacted waters, the SDEIS (and 404 Permit Application) include virtually the same description of the mitigation options with no additional information. The SDEIS includes qualitative descriptions indicating that “[c]areful monitoring of the mitigation sites would be conducted to ensure that the value of the mitigation sites was similar in function and equal in value to the wetlands lost.” SDEIS at 2-27. The document incorporates a set of generic assurances that a HEP analysis or equivalent for the mitigation sites will suffice to ensure that “at a minimum, a replacement of lost habitat values had occurred.”¹⁷ *Id.* The short shrift given to the wetland mitigation details is problematic for a number of reasons including the lack of adequate information for assessing the environmental implications of the project and its inconsistency with Section 404 permitting obligations as evidenced by the new mitigation rule requirements.¹⁸

On a related issue, the “stream” mitigation options are similarly flawed. The 404 Permit Application identifies “stream mitigation,” a concept the SDEIS only addresses in the context of fishery impacts (as opposed to jurisdictional waters impacts). The SDEIS references impacts to 4.3 miles of stream but only provides specific flow mitigation for 2.3 miles of trout spawning habitat; that fishery mitigation will purportedly be created by the release of water into two unnamed tributaries and into Upper Gooseberry Creek. *See, e.g.*, SDEIS at Table 3-11. The fisheries’ mitigation also includes assumptions regarding, for example, the ability to acquire and fence 4.0 miles of Mud Creek and other stream segments which, as noted above, are without any foundation. It also asserts (without supporting evidence) that the narrowing of the Middle Gooseberry channel will improve fishery habitat (with the reduced flows). SDEIS at 3-37. Rather than incorporating any substance, the SDEIS notes that a detailed plan would have to be prepared and a right-of-way acquired. Similarly, the 404 Permit Application indicates that “[p]rior to construction . . . a detailed design will be developed. . . .” 404 Permit Application at 20. As indicated above, details regarding the stream mitigation are mandatory for both the NEPA assessment and as a prerequisite to CWA 404 permit issuance. The information provided to the agencies and the public is inadequate.

¹⁷ See comments below on ecological performance standards.

¹⁸ The confusion and lack of certainty regarding mitigation is even evident in the Corps’ Public Notice of the 404 Permit Application. That notice states “[a]fter construction of the proposed Narrows Reservoir, Fairview Lakes would likely provide some of the water needed for wetland mitigation.” Public Notice at 3. In fact, the mitigation alternative that would utilize the Fairview Lakes water is third in the list of the four possible mitigation sites in order of priority. The characterization of that mitigation option as “likely” is contradictory to the information in both the SDEIS and the 404 Permit Application. *Compare* SDEIS at 2.2.2.2.4 and 404 Permit Application at 4.1. *See also* Public Notice at 4 (referencing the applicant’s assertion that “all or a portion of the required wetland mitigation could be performed at [the Mud Creek] site”).

Improper Mitigation Focus. The Corps' 2008 rulemaking underscored the evolution of wetland science in its support of ecological performance standards and focus on the mitigation of lost aquatic resource functions and services (as opposed to mere replacement of impacted acreage). Mitigation projects should incorporate "performance standards . . . based on ecological outcomes, not construction milestones that may not reflect gains in aquatic resource functions or services." 73 Fed. Reg. at 19644. Moreover, "[t]he rationale for the required replacement ratio (based on functions and services) must be documented in the administrative record for the permit action." 33 C.F.R. § 332.3 (f)(2).

The 404 Permit Application and SDEIS fail to track the required focus on ecological outcomes. For example, the 404 Permit Application establishes that "[t]he functions of the wetlands to be disturbed have been identified by the [Corps] WET method and by professional judgment during field observations" as identified in the *Narrows Project Description and Alternatives Aquatic and Wetland Resource Report*, Engineering Science, Inc., 1989. 404 Permit Application at 9. Astoundingly, the application and corresponding evaluation of impacts is founded on documentation that is over twenty years old; the information fails to track the substantial development of wetland science and is so dated as to be completely inadequate to assess Project impacts or to ensure the adequacy of planned follow-up mitigation. On the other hand, the SDEIS improperly (and inconsistently) maintains that the primary function of wetlands is wildlife habitat, [so that] HEP was used to evaluate wetland values."¹⁹ SDEIS at 3-63. Reliance on a HEP analysis to justify mitigation adequacy mimics the information provided in the DEIS (and does not address comments provided on the same). It also contradicts the information provided with the 404 Permit Application which, as indicated, suggests that there are a multitude of other functions and services for the impacted waters. See 404 Permit Application, Table 2 (Identifying alternative functions in addition to wildlife habitat).

Watershed Approach Is Missing. The mitigation rule affirmed the importance of relying on a watershed approach to mitigation – mitigation projects ought to be located in the same watershed as the proposed impacts. 33 C.F.R. § 332.3 (c). The preferred mitigation alternative, *i.e.*, Mud Creek, is located in a separate watershed. This fact is not identified in SDEIS or 404 Permit Application and is further evidence of the outdated, incomplete nature of the evaluation of mitigation and its lack of consistency with the CWA and implementing regulations.

In sum, the SDEIS does not reflect a step forward with respect to the evaluation of Project-related waters impacts. Rather, the document reveals key flaws and missing information inconsistent with the required NEPA "hard look." Similarly, the significant waters-related gaps in the SDEIS (and 404 Permit Application) provide evidence that it cannot support issuance of a CWA 404 Permit.

¹⁹ The use of the term "values" in the SDEIS is illustrative of its outdated analysis. The Corps specifically rejected that term in its 2008 rulemaking in favor of "services," *i.e.*, a current term in the ecological literature. 73 Fed. Reg. at 19604.

51-20

9. The SDEIS's Cultural Resources Analysis is Flawed and Does Not Follow the Applicable Requirements of the National Historic Preservation Act.

Section 106 of the National Historic Preservation Act ("NHPA") and the implementing regulations describe specific obligations essential to accomplish the objectives encouraging the preservation and protection of America's historic and cultural resources. *See generally* 16 USC § 470(b). The SDEIS assessment of historic and cultural resources and, more specifically, the documentation regarding compliance with Section 106 of the NHPA is without substance. There is virtually no analysis of any facts related to historic properties' consideration. As such, the SDEIS provides no means for assessing corresponding Project-related impacts.

The SDEIS cultural resources discussions does not track the step-by-step procedural requirements and, instead, appear to consist of a "cut and paste" of information from some earlier version of Project-related documentation. By its own statements, the SDEIS maintains that "[t]he design and, therefore, the Area of Potential Effect ("APE") . . . have changed since the 1979 cultural resource inventory." SDEIS at 3-81. Instead of providing any meaningful information on those changes, the SDEIS defers that effort indicating "Class I and Class III inventories covering the entire APE of the proposed project will be conducted prior to initiation of final design and construction. . . ." *Id.* The SDEIS promises that if effects to historic properties occur, it will address those at some future time and pursuant to an NHPA memorandum of agreement. SDEIS at 3-81 to 3-82. As explained below, the reasoning presented in the SDEIS is at odds with the law.

The NHPA regulations incorporate specific requirements for coordination of Section 106 compliance with NEPA obligations. *See generally* 36 CFR 800.6. Those provisions establish that "[a]gency officials should ensure that preparation of . . . an EIS and record of decision includes appropriate scoping, identification of historic properties, assessment of effects upon them, and consultation leading to resolution of any adverse effects." 36 C.F.R. § 800.6(a)(3). The regulations prescribe a process to avoid duplication of efforts noting that the NEPA process itself can be used to comply with section 106 obligations in lieu of following the specific NHPA procedures. 36 C.F.R. § 800.6(c). In particular and during preparation of the draft EIS, the agency officials "shall," among other things: identify consulting parties; identify historic properties; consult regarding the effects of the undertaking on historic properties with the State Historic Preservation Officer ("SHPO") Indian tribes, other consulting parties, and the Advisory Council on Historic Preservation ("Council"); involve the public; and develop, in consultation with identified consulting parties, mitigation measures (and describe them in the DEIS). 36 CFR 800.6(c)(1). The regulations define how those environmental documents shall be reviewed by the public, consulting parties and other agencies (including the mandatory submission of the DEIS to the Council). 36 C.F.R. § 800.6 (c)(2). The provisions also contemplate a process (including integration with the Council) for resolving any objections to the environmental documentation related to 106 compliance.²⁰ 36 C.F.R. § 800.6(c)(3).

²⁰ These process issues are not novel. The Corps has similar requirements with respect to NHPA compliance. "If a permit application requires the preparation of an [EIS] pursuant to [NEPA], . . . the SHPO and the [Council] will be given the opportunity to participate in the scoping process and to comment on the Draft and Final EIS." 33 C.F.R. Part 325, App. C, Para. 2.d (Corps' Procedures for the Protection of Historic Properties).

The SDEIS fails to fulfill any of the referenced NHPA regulatory requirements. The SDEIS acknowledges that its preparation has not included a review of historic properties in the vast majority of the area potentially affected by the Project. SDEIS at 3-81 to 3-82. Indeed, the SDEIS states that an evaluation of “predicted effects” must be postponed pending inventories to be conducted at some future time period. SDEIS at 3-82. The lack of substance with respect to the NHPA analysis is further apparent in the 404 Permit Application; it includes four sentences on NHPA compliance referencing a 1979 survey report. 404 Permit Application at 17.²¹

In summary, the cultural resources’ section of the SDEIS falls far short of the required documentation necessary to comply with Section 106 of NHPA. The recitation of commitments made in a prior decade --based on thirty year old surveys of a portion of an earlier iteration of a reservoir site -- is insufficient under NEPA, the NHPA and fails to provide the information essential to support issuance of a 404 permit for the Project.

10. The SDEIS Analysis of Fish and Wildlife Impacts is Flawed and Outdated.

The primary basis of the SDEIS analysis of fish and wildlife mitigation and impacts is the Fish and Wildlife Coordination Act Report. *See* SDEIS at 3-7. That report was prepared by the U.S. Fish & Wildlife Service (“FWS”) and the Utah Division of Wildlife Resources (“DWR”), in 1994, over 15 years ago! Based on the SDEIS, the Report has not been updated since that time, and the last time the Bureau even sought the input of the FWS regarding whether the Report should be updated was in 2006, four years ago (there is no indication that the Bureau solicited the view of the DWR at that time). *See* SDEIS at 4-1. Yet according to a letter in the SDEIS, in Appendix D, the Bureau would typically seek FWS review of a potentially stale Fish and Wildlife Coordination Act Report at least every three years (“Because it has been almost three years since the Coordination Act Report was prepared, Reclamation believes it is necessary for the Service to review and update, if needed, the 1994 report for inclusion with the revised EIS being prepared”).

51-21

The fact is, the SDEIS analysis relies on a Coordination Act Report that is nearly 16 years old, which is light years in terms of fish and wildlife impact assessment methods, and also in terms of FWS and DWR mitigation policies (which are the primary focus of the report, i.e., ensuring that a project fully complies with both FWS and DWR’s fish and wildlife mitigation policies). For example, many fish and wildlife habitat mitigation ratios have changed over the last few years, an extremely important consideration for a project like the Narrows. The Bureau must go back to the FWS and DWR, and seek a review and update of that report, or there can be no assurance that the impacts and mitigation in the EIS are accurate and meet current standards.

Similarly, in terms of ESA-listed species and state and federal sensitive species, there is no indication that the Bureau has ever gone back to the FWS or DWR and requested an updated list

²¹ The SDEIS appears to rely on 1996 and 1997 correspondence between the Bureau and SHPO as satisfying its Section 106 responsibilities. SDEIS at 4-2 and Appendix E. That assertion is flawed for a number of reasons including the fact that the Project has evolved since the time period in question and that the Section 106 regulations have been amended since the time period in question. *See* SDEIS at 4-2. Similarly, 1996 communications with certain tribes (as articulated in a single paragraph in the SDEIS) fail to satisfy, among other things, the obligations specified under the Section 106 regulations. *See id.*

51-22

of which of those species might be in the project area, which is typically done every year or so during a prolonged permitting process. Nor is there any evidence that the project's biological assessment has been reviewed and updated since 1999, over ten years ago. Again, this is highly problematic because the lists of ESA-listed species, and of state and federal sensitive species, is constantly being updated (and typically growing), and because the understanding of suitable habitat and the historic range of many of these species has also advanced.

51-23

As just one example, concerns over declining populations and habitat of the greater sage grouse have mounted over the last decade or so, and the sage grouse was first designated a state-sensitive species several years ago, and now has been designated as a federal ESA candidate species after the FWS recently issued a "warranted but precluded" listing decision. We understand that the Narrows project area may contain good summer habitat for sage grouse, and there have even been reports of sage grouse sitings in this area over the last few years, yet the SDEIS is totally silent on sage grouse, a direct result of being badly outdated and evidence of a failure to obtain updated reviews by the FWS and DWR. Similarly, there is almost certainly habitat for the threatened Ute ladies'-tresses (*Spiranthes diluvialis*) in the project area, both at and just below the dam site, and in the Sanpete Valley where the pipeline and distribution facilities would be located, but the SDEIS does not even consider this threatened plant in its analysis.

51-24

In light of the above, we believe it is clear that the SDEIS analysis of fish and wildlife impact and mitigation is badly outdated and needs to be redone in order to comply with NEPA's "hard look" and data quality requirements.

51-25

11. Water Quality Impacts are not Sufficiently Addressed in the SDEIS.

The SDEIS makes passing reference to potential Project-related water quality issues. *See, e.g.,* SDEIS at 3.5.3. Notably, the identified water quality implications include, among other things, risks to the existing good quality of the streams affected by construction (*e.g.,* Gooseberry Creek); decreased water quality (*e.g.,* increased phosphorus concentrations) in Scofield Reservoir; and increasing salinity concentrations in the Colorado River system.²² There are, in addition to those specific water quality issues, other water quality considerations not identified in the SDEIS.

51-26

51-27

For example, the SDEIS fails to incorporate adequate information so that the agencies (and the public) can properly consider (1) the pertinent Project-related limitations (such as those associated with related permitting efforts) in light of possible contributions to water quality excursions in an already "impaired" water body; (2) the requirements (and Project implications) associated with the State's mandatory antidegradation analysis of the possible Project-related discharges; and (3) public health concerns considering the population's reliance on a potable water supply from Scofield Reservoir, *i.e.,* downgradient from and affected by the Project. These three particular issues are examples of other water quality implications that need full consideration in the environmental analysis; they are further addressed below.

²² Most of these SDEIS water quality discussion simply parrots the discussion in the DEIS and disregards most of the earlier comments related to the same. *See, e.g.,* Exh. 2.

51-28

Scofield Reservoir is included in the Utah Division of Water Quality (“DWQ”) list of impaired waters, *i.e.*, the CWA 303(d) list, based on its low dissolved oxygen and high total phosphorus loading. EPA adopted DWQ’s plan for reducing phosphorus loading into the reservoir (calling for a 28% reduction as part of establishing the Total Maximum Daily Load (“TMDL”) for the reservoir); the implementation of the TMDL is ongoing. Whereas the SDEIS information acknowledges that the Project may increase the phosphorus concentrations in Scofield Reservoir, the SDEIS does not specifically evaluate whether, and to what degree, construction-related storm water or other Project-related discharges to the drainage basin could be contributing to that load.²³ Those Project discharges may be precluded by the National Pollutant Discharge Elimination regulatory provisions which prohibit the issuance of a permit for a new source or discharger if the discharge from its construction or operation will cause or contribute to a violation of water quality standards. *See* 40 C.F.R. § 122.4(i) (as codified in Utah Admin. R317-8-2.2.7); *Friends of Pinto Creek v. EPA*, 504 F.3d 1007 (9th Cir. 2007) (deciding that permit could not be issued for discharge that would contribute to water quality standards violations in an impaired water body despite specific plans to implement offsets reducing contributions of that pollutant to the water). The SDEIS fails to provide sufficient information to analyze the water quality consequences of the Project-related construction (and the possible implications for required permit issuance). The outcome of this assessment will, in turn, shed light on the viability of the referenced (and very conceptual) water quality mitigation.²⁴

51-29

Scofield Reservoir is classified as a Class IC water under the State water quality standards provisions. Utah Admin. R317-2-13.12. Class IC waters are protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water. Utah Admin. R317-2-6. DWQ has recently promulgated regulations providing additional detail related to implementation of the CWA antidegradation requirements. *See generally* Utah Admin. R317-2-3.5. An antidegradation review is required for proposed federally regulated activities, such as those applicable to the Project under Sections 401 and 404 of the CWA, *i.e.*, the water quality certification and the CWA 404 permit provisions. The antidegradation provisions are more rigorous for discharges with the potential to affect potential drinking water sources. As such, an inadequate water quality analysis in the SDEIS has substantial implications for a Project; the lack of details associated with Project water quality implications is inconsistent with NEPA and is insufficient to support a 404(b)(1) assessment for purposes of issuance of the CWA 404 Permit. Correspondingly, these flaws undermine DWQ’s assessment of water quality standards compliance (essential for 401 certification and any required antidegradation analysis for Project-related storm water or other discharges). *See also* Price River Water Improvement District, SDEIS Review and Comments (May 24, 2010) (noting additional treatment costs related to increasing levels of phosphorus and disinfection byproduct formation potentially associated with reductions in flows to Scofield Reservoir).

²³ The DEIS Comments addressed, among other issues, the fact that there are numerous potential water quality impacts associated with the Project, the majority of which were not analyzed in the DEIS and still have not been addressed in the SDEIS.

²⁴ The SDEIS includes vague references to generic channel stabilization measures, stream improvement commitments and assurances of control under other permitting programs as evidence of effective offsets to measurable water quality impacts. *See* SDEIS at 3-55 to 3-59. It does not provide a substantive analysis of the effectiveness of these measures or whether the proposed options are even available for implementation such as land ownership for fencing.

51-30 Earlier comments on the DEIS looked to specific potential health concerns associated with low water levels in Scofield Reservoir. The prior comments referenced the view of one Carbon County physician who conducted an informal study of patient illnesses during drought conditions in 1992. He indicated he believed there is a correlation between low water levels in Scofield Reservoir and gastrointestinal illness. These comments have never been addressed in the various iterations of the DEIS. The issue is directly relevant since the Project will (as specified in the SDEIS) result in lower water levels in Scofield Reservoir which, as indicated, is an important source of Carbon County drinking water. The disregard of (and complete failure to consider) this public health concern in the SDEIS violates the requirements of NEPA and provides further evidence that the SDEIS is not a current, compelling document.

51-31 In addition, in verbal comments provided to the Bureau at a public meeting in Price, the Price River Water Improvement District described the increasing awareness over the last several years of how treatment of water containing high levels of organics, which will increasingly occur if the Narrows Project is built, results in the production of toxic disinfection byproducts in the treated water, presenting unacceptable risks to those who drink and otherwise utilize the water. The SDEIS does not address this problem at all.

51-32 In sum, there are a number of water quality considerations that are not adequately addressed by the incomplete SDEIS references to Project-related discharges and the vague, unsupported identification of water quality mitigation. The SDEIS water quality analysis is insufficient under NEPA, and also will not support issuance of a 404 Permit Application (and the corresponding, required DWQ 401 Certification).

C. Miscellaneous Comments

- 51-33
- Based on text in the SDEIS at 1-5, it appears that the Sanpete District has not updated its SRPA loan application since 1994. Reliance on this 16-year old application appears to be part of the reason that so much information in the SDEIS is outdated. The Bureau must require an updated loan application be filed, and make it available to the public, and describe the information from the updated application in the final EIS.
 - At page 1-6 of the SDEIS, it is stated that the Bureau considers the “historical tie” between the Gooseberry Project and the Scofield Dam Project sufficient to justify an impact analysis in Chapter 3 that assumes the Scofield Reservoir had not been enlarged. This analysis has no place in the SDEIS and indicates a continuing bias by the Bureau that fails to accept the findings of federal courts that Carbon County water interests did not agree to the Narrows Project as part of the 1984 Compromise Agreement.
- 51-34
- At page 1-18 of the SDEIS, it is stated that “through a proposed operating agreement associated with the Narrows Project, releases would be made from the privately owned Fairview lakes to re-establish minimum instream flows in two small tributaries to Gooseberry Creek above the Narrows Reservoir Site.” Because this is part of the proposed mitigation, the EIS needs to provide evidence that such an agreement is realistic and will actually be reached, and that there is a legal basis in Utah law to protect the

purported instream flow rights. There is reason to believe the private owners of Fairview Lakes are not inclined to such an agreement. Indeed, the Narrows Project would trigger the need for numerous land use agreements/land use changes. These issues are loosely referenced in the SDEIS with no corresponding details. *See, e.g.*, SDEIS at 3-56 (referring to “protection zones” eliminating land use practices that would impact water quality).

- 51-35 • At page 1-19, the SDEIS notes that the process of developing flow recommendations for the Price River to assist in the recovery of endangered Colorado River Fish Species is still underway. The EIS should not be finalized until after these recommendations are finalized so they can be taken into account with respect to Price River depletions that would be caused by the Narrows Project, which could require further consultation under the Endangered Species Act.
- 51-36 • The “required permits” list on page 1-26 of the SDEIS is incomplete. A footnote says that the Sanpete District would determine the full list of required permits before it actually begins construction. That does not satisfy NEPA’s disclosure requirements; a complete list must be supplied.
- At page 3-86, the SDEIS contains a discussion of the 1941 Reclamation Act Withdrawal in the project area, including a portion of the proposed dam site, and the interplay between the Bureau’s and the Forest Service’s authority over these lands. While not expressly stated, it appears this discussion is meant to explain or justify why the Forest Service is not required to issue a Special Use Authorization for construction of the Narrows Project on National Forest Land. This discussion is confusing and needs to be clarified, by addressing at least the following points.
- 51-37 ○ The 1941 Reclamation Withdrawal was for the Gooseberry component of a Bureau project under the 1902 Reclamation Act. The SDEIS states in several places that the Gooseberry Project was never built, and that the Narrows Project is not a Bureau project under the 1902 Act, but instead is a private project that seeks Bureau financing under the SRPA. The Bureau needs to confirm whether and under what legal interpretation of the 1941 Withdrawal the Narrows Project, which is private, can be authorized to use the subject land.
- 51-38 ○ Assuming that the Narrows Project is a legitimate use under the Withdrawal, how will the Bureau authorize use of the land? Will it be through a lease, and if so will it be for fair market value? A land sale? Some other mechanism?
- Has the Forest Service agreed that it does not have the authority to require a Special Use Authorization for the Project? In writing? If so, that should be documented in the EIS.
- 51-39 • At page 3-55 to 3-56, the SDEIS describes a eutrophication study performed by Franson-Noble, dated 2006. Because Franson-Noble is the applicant’s long-time engineering firm, and increased eutrophication is a very important impact of the proposed action, the Bureau is required to review, verify and take responsibility for the results of this study.

The Bureau should verify that it has done this independent review, applying the appropriate expertise, and document that fact in the EIS.

- At pages 4-1 to 4-3, the SDEIS addresses “Consultation and Coordination.” According to this discussion, the following appears to be the case:
 - Section 4.1: Interagency coordination meetings took place between 1996 and 2003, and then apparently either were discontinued or severely pared back. The EIS needs to document whether, when and what kind of interagency coordination took place over the last 7 years (2003 until present). Based on the outdated nature of much of the information in the SDEIS, we suspect that little if any coordination has occurred over the last several years.
 - 51-40 ○ Section 4.2.1: Fish and Wildlife Coordination Act: It appears that it has been four years since the Bureau verified with the FWS and DWR that this Report, and the resulting impact and mitigation sections of the EIS, were adequate and up to date. This should be confirmed and, if correct, the FWS and DWR should be contacted and asked again whether they consider this very old (1994) report to have continued validity.
 - 51-41 ○ Section 4.2.2: Endangered Species: It appears that the last time the Bureau requested a list of endangered, threatened and/or sensitive species from the FWS and/or DWR with the potential to exist in the project area was sometime in the late 1990s, and that there has been no reevaluation of the biological assessment since about the same time.
 - 52-42 ○ Section 4.2.3: NHPA: It appears that it has been 13 years (since 1997) that input was sought from the Utah SHPO on this project. That is a very long time, and much has changed in terms of survey protocols, documentation requirements, and mitigation. The SHPO should be consulted again, to ensure continued concurrence.
 - 51-43 ○ Section 4.2.4: Tribal Consultation: It appears that the last consultation with any Native American Tribe was in 1997 or 1998. Many tribes have become much more active in terms of commenting on or otherwise being involved in proposed projects since that time. The Bureau should reach out to the Tribes again, to ensure their input is received, and that they are included in any NHPA or other efforts to assess and mitigate impacts to cultural resources with ties to Native American Tribes.
 - 51-44 ○ Section 4.3: Public Involvement and Scoping: It appears that the last public scoping effort took place in 2003, almost 7 years ago. As discussed above, this is far too long and several important issues have since arisen. The Bureau needed to provide an additional opportunity for scoping, which it can satisfy through considering the comments received on the SDEIS as being scoping comments, and issuing either a completely new supplemental draft EIS or a small supplement that deals with new information and analysis.
 - 51-45 ○ In the section of the SDEIS that addresses estimated project costs, Table 2-5 indicates that the Bureau has or will spend \$950,000 for participation in the “EIS and planning,” and that to date the Sanpete District has spent over \$2.8 million on the project. With respect to the Bureau, what is included in \$950,000? Is this the

cost attributed to the time spent by Bureau employees working on the EIS? Or has the Bureau also retained outside consultants or otherwise expended funds on the project? With respect to Sanpete, what is the basis for the cost estimate, i.e., what was its source, and who was the money paid to? Are any of Sanpete's costs reimbursable by the Bureau or pursuant to the loan?

Exhibit "A"



DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT CORPS OF ENGINEERS
650 CAPITOL MALL
SACRAMENTO CALIFORNIA 95814-4794

REPLY TO
ATTENTION OF

April 2, 1991

Utah Regulatory Office

Mr. Richard M. Noble
Franson-Noble & Associates
P.O. Box 69
American Fork, UT 84003

Dear Mr. Noble:

51-46

With respect to the proposed Narrows Project and anticipated wetland losses, the 404 b(1) guidelines require an analysis of alternatives which would avoid impacts to wetlands. This analysis should also include a clear justification and need for the project.

The plan description states the project is to develop supplemental water for irrigation to help offset mid- to late-season shortages. The shortages are said to average 20,300 acre feet per year. For the purpose of our analysis and documentation, we will need to know the following:

1. What has the frequency of these shortages over the last fifteen years been? Are the shortages typical for years of normal precipitation? It would be helpful if you could provide the water supply study from which the average shortage was calculated.

2. What is the significance of mid- to late-season shortages? Does the shortage affect all lands serviced by the irrigation company, or just some of the farms? How many crops of alfalfa are typically grown and harvested in a season and does the shortage affect all crops or just second or third crops? What is the cash value of those alfalfa crops for which the supplemental irrigation water would be used? In other words, if the supplemental irrigation water would enable the harvesting of a second or third crop, what is the value of that second or third crop versus the cost of the project including mitigation costs?

3. Not all farms serviced by the irrigation company are on a pressurized sprinkler system. What would the water savings be if the remainder of these farms are placed on such a system? Can the conveyance system be

-2-

made more efficient by lining the canals (if they are not already lined) and what would the water savings be from such lining? Would the water savings from completing the pressurized system and/or lining canals make up for the mid- to late-season shortfalls?

This information will help enable us to define the purpose and need for the project as well as to evaluate the practicability of other alternatives. Should you have any further questions, please contact Mr. Michael Schwinn, of my staff, 1403 South 600 West, Suite A, Bountiful, Utah 84010, telephone (801) 295-8380.

Sincerely,

Brooks Carter
Chief, Utah Regulatory Office

Copies furnished:

Utah Division of Wildlife Resources
Utah Division of Water Rights
U.S. Fish and Wildlife Service

Exhibit "B"



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922
October 7, 1992

Utah Regulatory Office (9250255)

Richard M. Noble
Franson-Noble & Associates Inc.
P.O. Box 69
American Fork, Utah 84003

Dear Mr. Noble:

51-47

We have completed our review of the Narrows Draft Environmental Assessment Report (DEAR) and the Draft Small Reclamation Loan Application Report (DSRLAR).

Only two alternatives are presented for consideration: Alternative A (the no action alternative) and Alternative C (the proposed plan). Other alternatives have been dismissed on the basis such alternatives would involve a breach of contract as per the 1984 Compromise Agreement. Our decision to issue or deny a permit will be based on the effect of the project upon the aquatic ecosystem, whether or not the project is in the public interest and an analysis of practicable alternatives. A range of alternatives, therefore, becomes critical in that decision making process. We cannot accept an alternatives analysis that is so narrowly defined by the 1984 Compromise Agreement as to preclude consideration of other, less damaging practicable alternatives nor to allow our decisions to be prejudiced by such an agreement.

The 1984 Compromise Agreement is used in a statement on page S-2 of the Draft Environmental Assessment Report to limit the location and storage capacity of the Narrows Project. However, this is only partially true. The agreement establishes a maximum storage capacity and a maximum flow that can be diverted annually. A smaller dam and reservoir could be constructed and less water stored and diverted under the 1984 agreement. The statement on page S-2 is misleading and eliminates consideration of other valid alternatives. Also, the agreement will only allow a maximum of 5,400 acre feet annually to be diverted to Cottonwood Creek. It is, therefore, difficult for us to justify storage capacity for 17,000 acre feet.

The documents, in our opinion, too quickly dismiss water conservation and efficiency improvements. Approximately 40 percent of the project area is still under flood irrigation and serviced by open ditches and canals. There is obviously considerable room for additional water savings that have not been

-2-

quantified. Indeed, the documents state that receipt of project water would be contingent upon additional water conservation measures being implemented. We see no reason such measures cannot be addressed and the water savings quantified as an alternative.

The documents state that water shortages, which begin to occur during mid-July, affect production of third crops during most years. However, according to the Manti Office of the U.S. Soil Conservation Service, this may be true for project lands in Moroni and Mt. Pleasant but growing season length for the Fairview area is probably more of a limiting factor. This leads us to believe that even under the best of water years the Fairview area may still be limited in its ability to produce a third crop. In our opinion, the water shortage problem may be overstated since growing season limitations appear to be a factor in some areas and have not been investigated in the documents.

Under the purpose and need section on page 1-4, the project would provide additional Municipal and Industrial water for future population growth. However, in checking with the Utah Population Estimate Committee's Economic Report to the Governor, Sanpete County's population increased by only 1.2 percent over the last decade. Even projected future population trends for the county, according to Economic Demographic Projections of the Office of Planning and Budget, shows only minor increases from a present level of 16,900 to 21,000 by the year 2010. Based on these data, it appears that the need for additional M & I water for future population growth is minimal.

According to the Draft EA, the reservoir will fluctuate approximately 10 to 20 feet a year. One of the mitigation measures for the fishery is to restore flows into tributaries to Gooseberry Creek as a means of providing additional habitat. These tributaries would be captured by the Narrows reservoir. We question the value of this mitigation plan in light of the amount of annual fluctuation of the reservoir. Reservoir drawdown will leave stretches of these tributaries surrounded by exposed and inhospitable mudflats. As a result, the tributaries may be inaccessible to fish fry, depending on the timing and duration of such drawdowns. This issue needs further analysis on the effect of reservoir drawdown to the value of the restored tributaries.

It is not clear to us what exactly flushing flows are nor how amounts and frequency of such flows would be determined. Furthermore, channel morphology, sinuosity, wavelength, amplitude of meanders, bed load and sediment size are primarily determined by a 1 1/2 year to 2 year event. It would appear to us that releases from the dam for the purpose of maintaining channel capacity, sinuosity and stability should model the frequency, duration and amounts of flows for such events.

We have serious doubts that the wetland mitigation proposed in the documents is practical and have serious concerns for the long-term maintenance and management of such a proposed wetland mitigation plan. The proposed mitigation lacks specifics and, in our view, is fraught with uncertainties making the success of the mitigation questionable.

The documents state the most affected water will be the middle 3 miles of Gooseberry Creek (page 2-17, DEAR) which will experience flow reductions of 90 percent. The proposed mitigation is to physically narrow the channel to compensate for the reduced flows and provide more fish fry habitat. We have concerns about how this channel narrowing will be accomplished and what impacts will be to existing riparian vegetation as a result. We also question whether or not the expertise and ability exists to re-create fry habitat. This proposal seems rather conjectural in nature .

Finally, we disagree with the results and conclusions of the degradation analysis on Cottonwood Creek. There is empirical evidence that streams with flows increased beyond the two year event for sustained periods have suffered severe degradation, i.e., Sixth Water on the Diamond Fork drainage. We have conducted a preliminary review of the September 12, 1991 degradation report and find fault with the analyses. Critical shear stresses were calculated based on mean bed particle size. However, there is no analysis on bank particle size and there is little correlation between bed particle size and that of bank particle size. The results are only a reflection of the increased flow's ability to scour the bed of the channel but has no bearing on the banks ability to resist such stress. The model also assumes a homogeneous substrate and is based on the average size of the bed material. However, the material is heterogeneous and the other 50 percent of the particles are smaller and the scouring of the smaller material will ultimately affect the integrity of the larger. We would also like to know if there has been any field verification of the model under natural stream conditions and whether or not the model is an accurate predictor of actual channel behavior. The study also disregards the increased flows affect on different channel types associated with Cottonwood Creek. For example, type A sections that are steep and well armored will probably experience little change while type C sections will suffer serious damage. Also, in addition to the two year event, the analysis should consider an event of greater magnitude. Stream degradation is nearly irreversible once started. A ten year event on top of tunnel releases may have very serious consequences that must be considered.

-4-

We appreciate the opportunity to review and comment on these documents. If you have any questions regarding our comments, you may contact Mr. Michael Schwinn, of my staff, at 1403 South, 600 West, Suite A, Bountiful, Utah 84010 or telephone (801) 295-8380.

Sincerely,

Brooks Carter
Chief, Utah Regulatory Office

Copies furnished:

U.S. Fish & Wildlife Service
U.S. Bureau of Reclamation
U.S. Environmental Protection Agency
Utah Division of Wildlife Resources

Exhibit "C"



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

July 21, 1994

Utah Regulatory Office (199250255)

Richard M. Noble
Franson-Noble & Associates Inc.
P.O. Box 69
American Fork, Utah 84003

Dear Mr. Noble:

51-48

Reference is made to your letter dated June 30, 1994 in which you asked whether or not the Narrows Draft Environmental Impact Statement contained the information necessary for the Corps to conduct its own 404 (b)(1) Guidelines analysis.

After a second review of the DEIS, we have concluded that the document only partially addresses the information necessary for the Corps' 404 (b)(1) analysis. The major flaw of the DEIS is in the development and analysis of the alternatives. The DEIS unreasonably restricts the scope of alternatives to that which was identified in the 1984 Compromise Agreement. It is the Corp's responsibility under the Guidelines to consider all practicable alternatives that address the basic and overall purpose and need of the project as it is determined by the Corps. As stated in earlier correspondence (see our letter dated October 7, 1992), the Corps cannot restrict its own alternatives analysis to so narrow a field as that given by the 1984 Compromise Agreement.

Prior to an alternatives analysis, it is also the Corp's responsibility under the Guidelines to determine if the proposed project (i.e., the preferred alternative as described in the DEIS) would result in significant degradation of the waters of the United States (see 40 CFR 230.10(c)). In using this approach, the environmental impacts of the proposed activity are given substantial weight. If the environmental impacts are severe, this overshadows the remainder of the 404 (b)(1) Guidelines analysis. The more valuable the wetland and the more destructive the project, the more rigorous the alternatives analysis will be. Therefore, it is the Corps' intent to conduct its own independent analysis under the 404 (b)(1) Guidelines.

-2-

If you have any questions, please contact Mr. Michael Schwinn, at the Utah Regulatory Office address, 1403 South 600 West, Suite A, Bountiful, Utah 84010, or telephone (801) 295-8380.

Sincerely,

Brooks Carter
Chief, Utah Regulatory Office

Copies furnished:

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service, Manti LaSal National Forest
U.S. Bureau of Reclamation, Upper Colorado Office
Utah Division of Wildlife Resources

Exhibit "D"



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

July 20, 1994

Utah Regulatory Office (199250255)

Robert D. Williams
U.S. Fish & Wildlife Service
Utah Field Office
145 East 1300 South, Suite 404
Salt Lake City, Utah 84115

Dear Mr. Williams:

51-49 We have completed our review of the Draft Coordination Act Report for the Draft Environmental Impact Statement for the Narrows Project. It would be premature at this time for the Corps to comment on the adequacy of the mitigation either proposed by the proponent or recommended by the Service and the Utah Division of Wildlife Resources; the presumption being that the preferred alternative and the impacts identified in the DEIS are a given. Furthermore, we are not prepared at this point to accept the project proponent's overall purpose and need of the project nor will we restrict ourselves to so narrow a range of alternatives as the proponent's reliance on the 1984 Compromise Agreement would dictate.

If you have any questions, please contact Mr. Michael Schwinn, at the Utah Regulatory Office address, 1403 South 600 West, Suite A, Bountiful, Utah 84010, or telephone (801) 295-8380.

Sincerely,

Brooks Carter
Chief, Utah Regulatory Office

Exhibit "E"



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CALIFORNIA 95814-2922

December 30, 1997

Regulatory Branch (199250255)

Kerry Schwartz
U.S. Bureau of Reclamation
Provo Area Office
302 East 1860 South
Provo, Utah 84604-7317

Dear Mr. Schwartz:

51-50

We have completed our review of the Preliminary Draft Environmental Impact Statement for the Narrows Project. In general, we are concerned about the objectivity of the information, analyses and conclusions in the document. Our comments are as follows:

CHAPTER 1: PURPOSE AND NEED

Section 1.4.1 Additional Municipal Water Supply

Part of the purpose and need has been stated in the framework of providing additional M&I water. The rationale given is that during irrigation shortages high quality culinary water is diverted to outside use, such as lawn watering, to make up the deficit. We do not consider this a valid need. The diversion of culinary water to lawn watering is a voluntary act on the part of the individual(s) and we fail to see the connection to legitimate M&I needs. An obvious alternative that we deem practicable in the sense of the 404 (b)(1) guidelines is landscaping that is compatible with north Sanpete's precipitation and climate. We seriously question the argument of building a dam and reservoir in order to water lawns and state it as an M&I need.

This section also discusses population trends in Sanpete County in light of additional M&I water. The amount of water needed is calculated at an additional 2,800 acre feet by the year 2020. This demand is based upon an average use of 270 gallons of water per capita per day (Tables 1-2, 1-4). The discussion here should place Sanpete's per capita water consumption in the context of national and regional averages. Utah in general and Sanpete County specifically, have some of the highest, if not the highest, per capita water consumption rates in the country. The point being that considerable room exists to reduce M&I demands without affecting economic development or lifestyle. We question

the validity of the stated M&I shortfall given the lavish use of water in Sanpete County.

Section 1.4.4 Recreation and Fishery Opportunities

Fishing and recreation have been identified as a need within the County. While we do not disagree that demand for such opportunities exist and continues to increase, we do not accept this as part of the purpose and need of the project. Recreation and fishing have been defined so narrowly that only a dam and reservoir can meet the need. Stating this as a purpose and need will be problematic in the alternatives analysis since there exists readily available and practicable alternatives. Certainly, a dam and reservoir can furnish such activities, but so can many other existing bodies of water in the vicinity. Pursuant to the 404 (b)(1) guidelines, the Corps may only permit the least damaging alternative. If the purpose and need of the project is to provide for recreation then the Corps is obliged to look at other, less damaging alternatives to meet that need.

CHAPTER 2: THE ALTERNATIVES CONSIDERED

Section B.2.5 Wildlife Measures

The U.S. Fish and Wildlife Service's Habitat Evaluation Procedures (HEP) were used to model impacts in terms of Habitat Units (HU's). It is unclear what relationship the 150 acres of conservation easements and the acquisition and enhancement of 640 acres of land has to replacing lost HU's. There is no quantification of HU's from the proposed mitigation to indicate that lost HU's are adequately compensated for. This is true for both the proposed and small reservoir alternative.

On page 2-22 a statement is made that the SWCD will augment seed for the U.S. Forest Service's watershed and range improvement projects. Again, it is not clear how this fits in the overall mitigation for wildlife impacts nor is it quantified in terms of HU's gained. Additionally, we see little merit giving mitigation credit on federally owned lands when the land management agency already has a charge and responsibility for wise stewardship of its trust resources.

Section C.1 Water Supply and Use

A problem cited with the smaller reservoir plan is the lack of carry-over storage and reduced yield during below average precipitation. A worse case scenario is presented without a probability or frequency of occurrence. The seriousness of this limitation cannot be assessed without such an analysis.

Section 2.4 Alternatives Considered and Eliminated

C. Conservation Without Development of Other Water Supplies.

Converting the remainder of north Sanpete County to sprinkler irrigation and replacing open ditches and canals with pipelines is estimated to save approximately 8,000 acre feet per year. To understand what this means in reducing the shortage, it should be compared to the Proposed Action and small reservoir alternative; i.e., the proposed plan will reduce shortages from 30 percent to approximately 19 percent of the time. What will the shortage be reduced to with conservation measures alone?

On page 2-52 it states that one reason this alternative was not considered further is because irrigation supplies would still be inadequate. However, we note that irrigation supplies under the proposed plan are also inadequate. It becomes a matter of degree to which the shortages are reduced and we are not prepared to concur that conservation measures alone are not a practicable alternative.

CHAPTER 3: AFFECTED ENVIRONMENT

Section 3.2.3. Predicted Effects (Wildlife)

This section describes the HU's lost to the alternatives but there is no discussion on the HU's gained from the proposed mitigation. One cannot evaluate the anticipated effectiveness of the mitigation without modelling the results.

Section 3.3. Water Resources

General: Table 3-4 should be accompanied with a corresponding hydrograph for each stream segment for a more graphic presentation of the changes in quantity, timing, frequency and duration of flows. Also, the frequency at which wet years, dry years and average years occur should be quantified and plotted.

Similarly, Figure 3.2 should be expanded to comparatively show the operational hydrograph for Scofield on a monthly basis pre- and post-project for average, wet and dry years. The depiction of reservoir contents at the end of various water years is not very helpful.

Section 3.5 Water Quality

3.5.1.b Lower Gooseberry Reservoir: Because a water quality problem has been identified and the risk appears high for further water quality degradation and fish kills in Lower Gooseberry Reservoir, the discussion needs more detail on the problems and limiting factors of the reservoir. The existing analysis is, in our view, inadequate both for the affected environment and the predicted effects. The depth of analysis should be at least

commensurate with that given to Scofield Reservoir.

3.5.2 Methodology and Impact Indicators; Flushing Rate Comparison Phosphorus Mass Balance Analysis and Trophic State Index (pg 3-51): It is stated that fish kills will occur 80 percent of the time when flushing rates drop below 0.85. This occurred in 4 of the 33 years under the no action plan and is predicted to increase to 5 out of 33 years under the proposed plan (pg 3-53). It is also stated that no fish kills occurred when the flushing rate exceeded 1.1. However, in reviewing Figure 3-7 we note that fish kills occurred in 11 years out of 33 and the correlation between flushing rates and fish kills appears weak; roughly 45 percent of fish kills occurred when flushing rates were greater than 0.85. Also, fish kills occurred in 1961, 1982 and 1990 when, it appears, that flushing rates did indeed exceed 1.1.

The discussion in this section leads one to believe that fish kills only occur when flushing rates drop below 0.85 and, furthermore, that this has only happened in 4 years out of 33 under the no action plan and will increase to 5 years out of 33 under the proposed plan. The data however, demonstrate otherwise and this is not an accurate presentation of water quality problems and fish kills. A more thorough discussion of reservoir conditions at the time of year that fish kills occurred is warranted. Also, presenting yearly averages of flushing rates, phosphorus loading and TSI's is not very helpful in understanding the problems in Scofield Reservoir nor how the proposed plan may affect the reservoir's limnology. Monthly flushing rates, phosphorus loading and TSI's for wet, dry and average years should be presented for pre- and post- project conditions. In addition, other factors that may be contributing to fish kills and whether or not there is a synergistic relationship with flushing rates, phosphorus loading and TSI's needs investigation and discussion.

Section 3.6 Vegetated Resources

3.6.3.b Proposed Action: The second paragraph on page 3-64 states that, because the stability and width of Cottonwood Creek will not be affected, there will be no impact to riparian vegetation. We disagree. From Table 3-4 it can be seen that flows in Cottonwood Creek at the canyon mouth drop off substantially after June under the no action alternative. Implementation of the proposed plan will result in significantly higher flows through July, August and September. Most riparian plants are adapted to survive short-term flooding; i.e., during spring runoff and thunderstorm events. However, it has been demonstrated from previous studies that mortality of riparian species increases with prolonged flooding. High flows on Cottonwood Creek will be extended an additional three months over base conditions. There is no reason to believe that the riparian community will not be affected by such a change.

Section 3.9 Economic and Social Resources

3.9.1 Affected Environment: Table 3-21 shows an average water supply shortage of 30 percent. Paragraph 4 on that same page states that two crops of alfalfa are harvested every year and that in favorable water years a third crop is harvested. The frequency at which the shortage occurs and the frequency at which a third crop of alfalfa is harvested under the no action plan and the proposed plan should be enumerated.

3.9.3.b Proposed Action: The sixth paragraph on page 3-78 states that increased M&I supplies will result in an economic benefit of \$46,000 per year. Explain what those benefits are and how the project affects it.

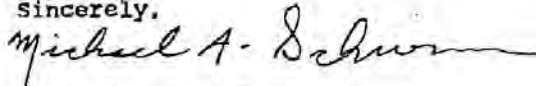
Section 3.13 Slope and Channel Stability

3.13.3.b Proposed Action: On page 3-93 it states that the dominant discharge in Cottonwood Creek will not change under the proposed plan. However, what is missing from this discussion is that the dominant discharge under the proposed plan will be extended an additional three months beyond baseline conditions. We believe it is premature to conclude that extended high flows will not have an impact on channel stability. In fact, we cannot conceive of a scenario where bedload and erosion would not increase as a result of extending the duration of dominant discharge. The amount of bedload moved under the no action plan should be measured and compared to what is predicted for the proposed plan in tons per day.

A comparison of the baseline hydrograph and the post-project hydrograph should be included here. The presentation of such a graph should be a daily discharge and not a monthly average. One needs to understand what the duration of dominant discharge is under the no action plan in terms of days or weeks verses what the duration will be under the proposed plan.

We appreciate the opportunity to review and comment on this draft. If you have any questions, please contact me at the Utah Regulatory Office, 1403 South 600 West, Suite A, Bountiful, Utah 84010, telephone (801) 295-8380.

Sincerely,



Michael A. Schwinn
Chief, Utah Regulatory Office

Copies furnished:

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

Water User Agencies
and Organizations

U.S. Forest Service, Manti La-Sal National Forest
Utah Division of Wildlife Resources, Salt Lake City
Utah Division of Wildlife Resources, Price

12/31/97

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REPLY TO
ATTENTION OF

650 CAPITOL MALL
SACRAMENTO CALIFORNIA 95814-4794

Exhibit "F"

JUL 30 1991

Utah Regulatory Office

Mr. Patrick Collins
Mt. Nebo Scientific
P.O. Box 337
Springville, Ut 84663

Dear Mr. Collins:

51-51

This is in response to your request for information on the Corps' mitigation policy. Pursuant to a Memorandum of Agreement with the U. S. Environmental Protection Agency, dated February 6, 1990, our mitigation policy is as follows:

1. Avoidance; No discharge will be permitted if there is a practicable alternative that would have less adverse impacts. This presumes that upland alternatives for non-water dependent projects exists and that such alternatives have less adverse impacts. Compensatory mitigation may not be used to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives.

2. Minimization; All appropriate steps will be taken to minimize adverse impacts. Such steps will require project modification and permit conditions as a means to reduce impacts.

3. Compensatory Mitigation; Appropriate mitigation will be required for any unavoidable impacts which might remain after all appropriate steps have been taken to minimize those impacts. Generally, in-kind and on-site mitigation is preferred. Our preference for compensatory mitigation, in terms of priority, is as follows:

- a. Restoration of previously impacted wetlands.
- b. Creation of new wetlands in upland areas.
- c. Enhancement of existing wetlands.

The sequence of events; avoidance, minimization and mitigation, may only be interrupted under the following circumstances: the discharge is necessary to avoid environmental harm, or the discharge is expected to result in an environmental gain or insignificant environmental

-2-

loss. In other words, one may not proceed directly to compensatory mitigation without adequately demonstrating that a practicable alternative to developing in a wetland does not exist.

If you need further information, you may contact Mr. Michael Schwinn, of my staff, at 1403 South 600 West, Suite A, Bountiful, Utah 84010 or telephone (801) 295-8380.

Sincerely,

Brooks Carter
Chief, Utah Regulatory Office

Exhibit "G"

Robert J. Murdock, P.E.
2964 East 3135 South
Salt Lake City, Utah 84109

Phone 487-0258
March 18, 1994

Richard N. Lee, President
Carbon Water Conservancy District
P.O. Box 509
Helper, Utah 84526

Re: Studies related to the proposed Narrows Project

Dear Richard,

51-52 Enclosed is a copy of the results of an operation study I have performed that shows the affects of the Narrows Reservoir upon the storage water supply available from Scofield Reservoir. The calculations assume BOTH Scofield Reservoir and the Narrows Reservoir were constructed when Scofield Dam was enlarged in 1946 and that both reservoirs operated during the full 47 year period since then. The study was performed for two different sizes of the Narrows Reservoir. These were 14,500 and 5,400 acre-feet active storage, plus 2,500 acre-feet dead storage, which are the Recommended Plan and Smaller Reservoir Alternate Plan discussed in the Narrow Project DRAFT EIS.

The water releases from the Narrows Reservoir are those proposed for the Narrow Project in the DRAFT EIS. The historic storage record of Scofield Reservoir was adjusted based upon the amount of water retained in the Narrows Reservoir. Evaporation from the Narrows Reservoir and the change in evaporation losses from Scofield Reservoir due to its smaller size were part of the calculations.

The study covers the period from October 1, 1946 through September 30, 1993. The study uses historic storage amounts in Scofield Reservoir, the stream gauge records of the Price River below Scofield Reservoir, Gooseberry Creek near Scofield and near Fairview, and the Fairview Ditch and Tunnel all as published by the U.S.G.S. I supplemented this data with information from the Price River Commissioner Reports in the State Engineers office.

The Gooseberry Creek flows were adjusted to get the water supply at the proposed Narrows Dam site. All water released from Scofield Reservoir to make room for flood storage was added to Scofield Reservoir storage. Spills from Scofield Reservoir were evaluated based upon how much of the spill flow was likely used to satisfy the demands for irrigation and other uses.

Storage in Scofield Reservoir less than 72,100 acre-feet was assumed to be used for irrigation etc if the flow rates were typical of rates released for usage. If the flow rates

Richard Lee, 3/18/94, page 2.

were higher than typical use rates, part of the flow was assumed retained in storage and part was assumed released for usage. Calculated storage greater than 72,100 acre-feet was assumed spilled and lost.

Tables 1, 2 and 3 show monthly water storage amounts in Scofield Reservoir. Table 1 shows the historic data. It shows that Scofield Reservoir has been managed to never be without some active storage water available for use. Tables 2, 3, 4 and 5 show that with either size of the Narrows Reservoir, Scofield Reservoir could not have supplied the same amount of water as the historic uses. Tables 2 and 3 show the active storage pool in Scofield Reservoir would have been empty many times. Tables 4 and 5 show the amounts of shortage of the historic releases from storage in Scofield Reservoir. This is the amount of water that would not have been available if the Narrows Reservoir had been operating.

Based upon the Price River Commissioner Reports the average annual supply from Scofield Reservoir storage has been 21,924 acre-feet per year. Tables 4 and 5 show the total loss of historic storage supply from Scofield Reservoir is 76,471 or 62,829 acre-feet depending upon the size of the Narrow Reservoir. These losses average 1,627 or 1,337 acre-feet per year or 7.4 or 6.1 percent of what has been available.

Tables 6 and 7 show what the active storage contents of the Narrow Reservoirs would have been. Tables 8 and 9 show what the diversions of water and shortages to Sanpete uses would have been from the Narrow Reservoirs of different sizes. The total releases to Sanpete would have been 256,479 or 230,252 acre-feet depending upon the reservoir size. These diversions average 5,343 or 4,797 acre-feet per year. The shortages would have been 2,721 or 28,948 acre-feet or average 57 or 603 acre-feet per year depending upon the reservoir size. The shortages are 1.1 or 11.2 percent of the proposed diversion amount.

Calculations show the surface area of Scofield Reservoir (available for flat water fishery) is reduced an average of 302 or 253 acres depending upon the size of the Narrows Reservoir. The surface area losses at Scofield are 67 percent of the area gained by the larger Narrows Reservoir, and greater by 15 acres than the area gained by the smaller Narrows Reservoir.

COMMENTS:

1. The Narrows Reservoir causes losses to the useable stored supply in Scofield Reservoir. These losses would require frequent alteration of historic use patterns.
2. Only the months of March and April would not at some time require changes in the historic use patterns. The greatest and most frequent changes would be required during the late summer months.

Richard Lee, 3/18/94, page 3.

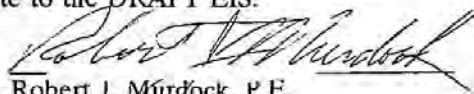
3. The negative impacts of the loss of Scofield Reservoir water for municipal, industrial etc uses should be evaluated and included in the DRAFT EIS.
4. The June 8, 1984 Agreement and the State Engineer's January 7, 1985 MEMORANDUM DECISION only allow 10,000 acre-feet active storage for transmountain diversion. Up to an additional 4,500 acre-feet active storage is allowed only as needed to provide for the minimum streamflow of Gooseberry Creek below the Narrows Dam. Brooks Canyon Creek was approved to be diverted to provide for the minimum streamflow below the dam. The minimum streamflow is 1.0 to 1.25 cfs or about 730 acre-feet per year.

The proposed plans outlined in the DRAFT EIS do not include a diversion from Brooks Canyon Creek so Gooseberry Creek water must be used for the minimum streamflow. Using Gooseberry Creek which has a minimum flow of 0.6 cfs for 2 to 3 months would require only about 60 to 75 acre-feet of active storage to provide the minimum streamflow. The Recommended Plan of the Narrows Project with 4,500 acre-feet active storage for minimum streamflow and 14,500 acre-feet total active storage does NOT comply with the approved water rights for the project.

5. The Small Reservoir Alternate for the Narrows Project has an average annual shortage of 11.2 percent which is a significant loss of benefits and would affect the economic feasibility of the project.
6. The Narrow Reservoir causes a reduction of the flat water fishery value of Scofield Reservoir. There is a water surface area reduction that closely offsets the area gained at the Narrows Reservoir. The decrease in water stored in Scofield Reservoir would cause the reservoir to be warmer in the summer and have less winter carry over capacity. These negative impacts should be addressed and included in the DRAFT EIS.
7. Adding storage at the Narrows Dam Site increases the total average useable stored supply from the Price River drainage by 3,716 or 3,460 acre-feet per year. I doubt that this amount of water for supplemental irrigation is worth the estimated costs.

These comments relate to the operation study. If you have questions please contact me. I intend to list other comments that relate to the DRAFT EIS.

Sincerely,


Robert J. Murdock, P.E.

cc: James Lee
Marvin Allen
E.J. Skeen

Water User Agencies
and Organizations

TABLE 1.

SCOFIELD RESERVOIR HISTORIC STORAGE - ACRE FEET												DATE 03-18-1994	TIME 11:20:25
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1946	0.	0.	0.	0.	0.	0.	0.	0.	1,450.	1,740.	3,450.	4,830.	
1947	5,760.	8,490.	8,340.	15,800.	35,900.	34,100.	23,000.	18,700.	12,800.	9,640.	10,700.	11,500.	
1948	13,000.	13,900.	15,400.	19,900.	28,000.	20,300.	9,150.	2,160.	771.	441.	1,920.	2,780.	
1949	3,950.	5,050.	6,490.	14,100.	39,300.	46,000.	35,700.	24,600.	18,900.	18,300.	19,700.	21,300.	
1950	23,200.	24,200.	25,700.	32,900.	51,900.	51,100.	43,700.	31,800.	26,900.	25,000.	26,500.	27,400.	
1951	29,300.	30,900.	32,200.	37,100.	53,800.	51,400.	39,000.	34,300.	26,500.	25,300.	26,300.	27,600.	
1952	30,200.	31,600.	33,800.	43,500.	76,500.	66,600.	57,500.	52,200.	47,300.	43,500.	43,900.	45,900.	
1953	46,100.	48,300.	50,900.	54,000.	58,300.	57,500.	46,700.	39,500.	31,100.	28,500.	30,000.	30,400.	
1954	32,000.	32,700.	34,800.	37,100.	33,600.	23,600.	16,300.	9,310.	7,250.	6,640.	7,090.	7,710.	
1955	8,990.	10,200.	11,500.	14,800.	26,100.	22,300.	13,000.	9,150.	3,680.	2,160.	2,910.	4,360.	
1956	5,900.	6,940.	8,660.	14,300.	29,100.	23,600.	13,500.	6,640.	2,040.	1,100.	1,450.	2,410.	
1957	3,680.	4,630.	6,050.	9,310.	26,500.	53,000.	44,700.	41,700.	37,800.	35,200.	36,600.	37,600.	
1958	38,800.	40,000.	41,700.	40,000.	71,200.	64,900.	50,600.	39,300.	34,800.	31,800.	32,200.	32,000.	
1959	32,900.	34,500.	35,900.	34,300.	34,500.	27,800.	18,700.	13,300.	8,180.	6,640.	6,050.	5,470.	
1960	5,760.	6,640.	8,020.	10,800.	19,300.	14,100.	5,760.	2,160.	1,560.	2,040.	2,160.	1,920.	
1961	2,160.	2,290.	3,680.	5,900.	6,050.	3,420.	1,330.	661.	551.	882.	992.	1,330.	
1962	1,560.	2,530.	3,420.	13,700.	39,300.	40,300.	30,900.	21,700.	16,700.	17,100.	17,100.	16,700.	
1963	16,500.	18,100.	20,100.	21,900.	30,000.	27,800.	17,100.	13,700.	12,600.	9,640.	9,980.	9,640.	
1964	9,980.	10,300.	11,500.	15,200.	35,000.	38,100.	26,900.	17,500.	11,700.	9,640.	10,200.	10,800.	
1965	13,000.	13,900.	15,200.	19,500.	42,200.	61,600.	59,100.	56,200.	51,400.	49,300.	49,800.	50,900.	
1966	51,900.	53,200.	55,100.	63,000.	67,800.	61,300.	50,100.	39,500.	35,000.	33,800.	34,100.	33,800.	
1967	36,600.	37,800.	39,800.	42,000.	60,500.	70,600.	61,900.	51,900.	46,700.	43,700.	44,200.	44,500.	
1968	45,700.	46,700.	48,500.	51,600.	72,300.	69,500.	59,100.	55,100.	44,200.	42,200.	42,700.	43,700.	
1969	45,200.	46,700.	39,000.	44,000.	72,300.	68,900.	59,100.	50,600.	45,700.	47,000.	47,500.	48,300.	
1970	49,600.	51,400.	52,400.	52,700.	69,200.	67,500.	57,500.	46,000.	38,800.	38,500.	39,000.	39,800.	
1971	41,200.	43,500.	45,700.	52,700.	69,500.	66,100.	53,500.	43,000.	37,300.	37,100.	37,800.	38,500.	
1972	40,700.	41,500.	44,500.	49,000.	53,000.	48,300.	33,400.	24,000.	19,100.	20,900.	21,300.	21,700.	
1973	22,300.	23,200.	24,600.	26,700.	64,400.	68,300.	59,700.	49,300.	42,200.	40,000.	40,700.	41,500.	
1974	43,500.	44,000.	45,500.	48,000.	66,900.	59,400.	48,500.	37,300.	32,200.	31,500.	32,000.	31,500.	
1975	32,200.	32,900.	34,500.	35,900.	51,900.	69,200.	63,300.	51,100.	43,700.	41,000.	42,500.	43,200.	
1976	43,700.	44,500.	45,500.	49,000.	61,600.	55,100.	43,200.	34,300.	31,100.	30,000.	29,800.	29,300.	
1977	28,400.	29,100.	30,200.	30,700.	27,200.	24,600.	20,900.	19,100.	17,700.	17,300.	17,300.	17,300.	
1978	17,300.	17,300.	19,700.	26,100.	50,300.	62,200.	51,600.	42,500.	37,300.	35,900.	37,300.	38,500.	
1979	40,000.	41,000.	42,500.	40,700.	65,200.	66,600.	56,700.	49,300.	41,500.	39,800.	40,700.	41,500.	
1980	43,200.	44,500.	44,500.	43,500.	71,200.	68,300.	60,000.	50,100.	47,500.	46,200.	47,500.	48,500.	
1981	49,300.	50,300.	51,600.	55,100.	55,600.	49,800.	39,500.	31,500.	29,100.	30,400.	31,500.	32,500.	
1982	34,300.	35,700.	37,300.	43,200.	73,800.	68,900.	61,300.	53,000.	47,500.	49,800.	52,400.	53,200.	
1983	52,700.	46,700.	38,500.	36,400.	61,900.	72,900.	67,200.	60,200.	50,300.	40,700.	43,000.	46,200.	
1984	48,500.	50,100.	39,000.	27,600.	60,000.	70,900.	64,400.	58,900.	51,600.	47,800.	43,500.	47,000.	
1985	49,000.	51,100.	53,200.	57,000.	70,300.	64,900.	56,400.	44,500.	40,200.	41,500.	43,500.	45,000.	
1986	46,700.	49,300.	43,700.	45,700.	73,800.	68,600.	60,500.	50,100.	44,200.	45,700.	47,000.	48,800.	
1987	50,900.	52,700.	55,100.	60,500.	61,600.	55,600.	47,500.	40,700.	35,900.	34,300.	35,900.	37,600.	
1988	39,500.	40,700.	42,700.	47,800.	57,000.	50,900.	39,800.	31,300.	27,200.	26,700.	27,200.	28,700.	
1989	30,000.	31,500.	34,300.	37,100.	35,200.	29,100.	19,300.	14,400.	11,500.	9,980.	10,660.	11,180.	
1990	11,700.	12,420.	13,510.	20,500.	21,930.	19,500.	12,240.	8,500.	7,400.	7,090.	7,250.	7,250.	
1991	7,710.	8,340.	9,810.	12,960.	23,580.	28,450.	19,300.	12,600.	9,310.	6,640.	7,560.	8,180.	
1992	8,990.	8,640.	11,530.	13,320.	9,480.	4,220.	2,530.	1,450.	980.	1,460.	2,170.	2,790.	
1993	3,690.	4,770.	6,800.	12,600.	47,510.	55,100.	44,970.	37,360.	31,780.	0.	0.	0.	

TABLE 2.

SCOFIELD RESERVOIR STORAGE WITH NARROWS RESERVOIR - ACRE FEET

DATE 03-18-1994

TIME 10:38:19

NARROWS RESERVOIR ACTIVE CAPACITY IS 14,500. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	1,450.	1,632.	3,274.	4,603.
1947	5,509.	6,224.	8,016.	15,003.	35,069.	33,119.	21,677.	17,169.	11,178.	7,932.	8,915.	9,664.
1948	11,141.	12,029.	13,510.	17,735.	23,303.	14,937.	3,614.	0.	0.	0.	1,435.	2,252.
1949	3,386.	4,459.	5,834.	12,284.	33,014.	38,244.	27,619.	16,424.	10,725.	10,094.	11,461.	13,047.
1950	14,941.	15,941.	17,400.	24,051.	40,067.	38,077.	30,405.	18,442.	13,502.	11,594.	12,953.	13,803.
1951	15,681.	17,268.	18,519.	22,681.	36,199.	32,595.	19,939.	15,130.	7,380.	6,151.	7,069.	8,310.
1952	10,871.	12,238.	14,376.	23,479.	69,893.	72,100.	63,272.	57,541.	52,425.	48,499.	48,797.	48,745.
1953	50,919.	53,103.	55,649.	58,477.	60,529.	57,934.	46,685.	39,226.	30,702.	28,014.	29,414.	29,732.
1954	31,260.	31,885.	33,886.	35,323.	30,142.	19,728.	12,263.	5,265.	3,195.	2,554.	2,945.	3,535.
1955	4,792.	5,987.	7,236.	10,309.	19,154.	14,498.	5,053.	1,170.	0.	0.	740.	2,181.
1956	3,714.	4,755.	6,427.	11,242.	22,974.	16,757.	6,486.	0.	0.	0.	314.	1,261.
1957	2,518.	3,448.	4,803.	7,835.	22,516.	43,850.	34,876.	31,649.	27,671.	24,954.	26,232.	27,176.
1958	28,337.	29,581.	31,119.	34,540.	63,721.	62,536.	47,868.	36,367.	31,816.	28,775.	29,124.	28,888.
1959	29,757.	31,342.	32,705.	30,890.	29,320.	21,976.	12,687.	7,294.	2,228.	695.	71.	0.
1960	304.	1,200.	2,527.	5,015.	10,983.	5,121.	0.	0.	0.	449.	520.	239.
1961	466.	590.	1,955.	3,902.	2,909.	343.	0.	0.	0.	282.	329.	628.
1962	819.	1,710.	2,510.	11,912.	32,750.	31,718.	21,797.	12,394.	7,330.	7,701.	7,641.	7,223.
1963	7,036.	8,636.	10,626.	12,361.	17,475.	14,308.	3,480.	77.	0.	0.	306.	0.
1964	301.	587.	1,748.	5,328.	22,142.	23,455.	11,901.	2,444.	0.	0.	526.	1,051.
1965	3,170.	4,012.	5,256.	9,298.	29,022.	45,499.	42,424.	39,102.	33,975.	31,660.	31,999.	32,999.
1966	33,916.	35,138.	36,881.	43,703.	46,292.	39,430.	28,216.	17,558.	13,113.	11,853.	12,101.	11,752.
1967	14,529.	15,714.	17,675.	19,753.	35,242.	42,930.	33,888.	23,812.	18,629.	15,631.	16,070.	16,304.
1968	17,432.	18,368.	20,088.	23,008.	41,778.	50,109.	39,442.	35,261.	24,299.	22,220.	22,633.	23,580.
1969	25,043.	26,714.	28,027.	38,769.	64,328.	61,117.	50,907.	42,254.	37,248.	38,399.	38,774.	39,471.
1970	40,672.	42,408.	43,304.	43,429.	56,359.	53,443.	43,122.	31,557.	24,324.	23,946.	24,340.	24,984.
1971	26,198.	28,449.	30,572.	37,231.	51,283.	46,788.	33,995.	23,474.	17,783.	17,535.	18,147.	18,742.
1972	20,824.	21,530.	24,239.	28,028.	30,104.	24,989.	10,158.	970.	0.	1,828.	2,139.	2,474.
1973	3,018.	3,873.	5,191.	7,085.	40,938.	43,143.	34,301.	23,900.	16,817.	14,605.	15,230.	15,950.
1974	17,851.	18,287.	19,715.	22,004.	37,307.	29,227.	18,342.	7,309.	2,430.	1,828.	2,280.	1,752.
1975	2,412.	3,082.	4,643.	5,997.	20,356.	33,107.	26,637.	14,412.	7,122.	4,427.	5,817.	6,409.
1976	6,804.	7,517.	8,446.	11,729.	21,618.	14,762.	3,065.	0.	0.	0.	0.	0.
1977	0.	689.	1,763.	1,977.	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	2,357.	8,264.	29,058.	37,215.	26,329.	17,144.	12,011.	10,735.	12,054.	13,221.
1979	14,688.	15,664.	17,131.	15,136.	36,339.	36,276.	26,280.	18,931.	11,247.	9,583.	10,434.	11,178.
1980	12,822.	14,073.	15,417.	20,518.	50,023.	60,773.	52,002.	41,963.	39,267.	37,877.	39,085.	40,017.
1981	40,755.	41,704.	42,893.	45,638.	44,236.	37,690.	27,292.	19,304.	16,922.	18,139.	19,162.	20,122.
1982	21,906.	23,300.	24,860.	30,194.	62,137.	72,100.	63,948.	55,424.	49,708.	51,616.	53,903.	54,873.
1983	56,462.	58,470.	60,085.	63,559.	72,100.	72,100.	67,867.	60,461.	50,297.	40,420.	42,499.	45,461.
1984	47,562.	48,993.	47,722.	55,243.	72,100.	72,100.	64,857.	59,063.	51,586.	47,543.	43,056.	46,365.
1985	48,188.	50,165.	52,128.	60,762.	72,100.	66,540.	57,600.	45,521.	41,108.	42,257.	44,112.	45,485.
1986	47,057.	49,524.	52,156.	62,201.	72,100.	72,100.	63,560.	52,961.	46,916.	48,229.	49,374.	51,088.
1987	53,167.	54,959.	57,320.	61,840.	61,299.	54,866.	46,582.	39,707.	34,861.	33,208.	34,764.	36,433.
1988	38,291.	39,456.	41,396.	46,067.	52,538.	45,870.	34,634.	26,086.	21,969.	21,420.	21,829.	23,256.
1989	24,485.	25,945.	28,633.	30,316.	26,834.	20,338.	10,459.	5,619.	2,781.	1,299.	1,810.	2,299.
1990	2,790.	3,482.	4,525.	10,665.	10,494.	7,631.	399.	0.	0.	0.	158.	122.
1991	545.	1,142.	2,566.	5,603.	13,392.	16,496.	7,184.	526.	0.	0.	835.	1,391.
1992	2,169.	2,805.	4,596.	5,670.	1,125.	0.	0.	0.	0.	417.	1,102.	1,704.
1993	2,563.	3,590.	5,491.	10,864.	40,499.	46,197.	35,755.	28,053.	22,450.	0.	0.	0.

Water User Agencies
and Organizations

TABLE 3.

SCOFIELD RESERVOIR STORAGE WITH NARROWS RESERVOIR ACRE FEET DATE 03-10-1994 TIME 10:45:20

NARROWS RESERVOIR ACTIVE CAPACITY IS 5,400. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	1,450.	1,632.	3,274.	4,603.
1947	5,509.	6,224.	8,016.	15,029.	35,107.	33,214.	21,771.	17,262.	11,271.	8,023.	9,007.	9,755.
1948	11,232.	12,121.	13,602.	17,827.	23,395.	15,028.	3,703.	0.	0.	0.	1,435.	2,252.
1949	3,386.	4,459.	5,834.	12,284.	33,238.	39,870.	29,234.	18,026.	12,313.	11,673.	13,040.	14,626.
1950	16,520.	17,520.	18,979.	25,630.	41,644.	39,646.	31,963.	19,989.	15,037.	13,121.	14,480.	15,330.
1951	17,208.	18,795.	20,046.	24,208.	37,724.	34,317.	21,646.	16,822.	9,051.	7,807.	8,725.	9,966.
1952	12,527.	13,894.	16,032.	25,133.	72,100.	72,100.	63,272.	57,541.	52,425.	48,499.	48,797.	48,745.
1953	50,919.	53,103.	55,649.	58,477.	60,529.	58,232.	46,982.	39,521.	30,996.	28,307.	29,707.	30,026.
1954	31,553.	32,178.	34,179.	35,616.	30,435.	20,019.	12,550.	5,547.	3,472.	2,830.	3,220.	3,810.
1955	5,067.	6,262.	7,511.	10,584.	19,429.	14,770.	5,320.	1,431.	0.	0.	740.	2,181.
1956	3,714.	4,755.	6,427.	11,242.	22,974.	16,757.	6,486.	0.	0.	0.	314.	1,261.
1957	2,518.	3,440.	4,803.	7,835.	22,516.	46,301.	37,313.	34,072.	30,082.	27,359.	28,637.	29,580.
1958	30,741.	31,906.	33,523.	36,944.	67,514.	67,088.	52,397.	40,875.	36,304.	33,252.	33,601.	33,365.
1959	34,234.	35,819.	37,182.	35,367.	33,791.	26,418.	17,081.	11,628.	6,498.	4,926.	4,303.	3,723.
1960	4,026.	4,923.	6,250.	8,737.	14,691.	8,770.	270.	0.	0.	449.	520.	239.
1961	466.	590.	1,955.	3,902.	2,909.	343.	0.	0.	0.	282.	329.	628.
1962	819.	1,710.	2,510.	11,912.	32,985.	33,921.	23,982.	14,558.	9,466.	9,818.	9,758.	9,340.
1963	9,153.	10,753.	12,743.	14,478.	19,587.	16,400.	5,533.	2,087.	1,012.	0.	306.	0.
1964	301.	587.	1,748.	5,328.	22,142.	23,455.	11,901.	2,444.	0.	0.	526.	1,051.
1965	3,170.	4,012.	5,256.	9,298.	29,022.	46,671.	43,589.	40,262.	35,129.	32,811.	33,151.	34,151.
1966	35,068.	36,290.	38,033.	44,854.	47,442.	40,908.	29,684.	19,015.	14,558.	13,291.	13,538.	13,190.
1967	15,967.	17,152.	19,112.	21,191.	36,677.	45,001.	35,946.	25,857.	20,661.	17,655.	18,094.	18,328.
1968	19,457.	20,392.	22,112.	25,032.	43,799.	53,319.	42,635.	38,437.	27,459.	25,370.	25,784.	26,730.
1969	28,193.	29,864.	31,177.	41,919.	70,081.	68,088.	57,846.	49,164.	44,131.	45,268.	45,642.	46,340.
1970	47,541.	49,276.	50,173.	50,297.	63,221.	60,953.	50,593.	38,991.	31,721.	31,323.	31,717.	32,360.
1971	33,575.	35,826.	37,948.	44,607.	58,651.	54,127.	41,291.	30,727.	24,992.	24,720.	25,332.	25,926.
1972	28,008.	28,714.	31,423.	35,211.	37,278.	32,121.	17,212.	7,911.	3,111.	4,912.	5,223.	5,557.
1973	6,101.	6,956.	8,274.	10,167.	44,012.	46,583.	37,720.	27,297.	20,193.	17,967.	18,592.	19,313.
1974	21,213.	21,650.	23,077.	25,365.	40,664.	32,565.	21,651.	10,575.	5,646.	5,015.	5,467.	4,939.
1975	5,599.	6,269.	7,830.	9,184.	23,532.	37,364.	30,863.	18,603.	11,269.	8,540.	9,931.	10,523.
1976	10,917.	11,630.	12,559.	15,842.	25,721.	18,832.	7,060.	0.	0.	0.	0.	0.
1977	0.	689.	1,763.	1,977.	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	2,357.	8,264.	29,058.	39,493.	28,591.	19,388.	14,237.	12,949.	14,268.	15,435.
1979	16,902.	17,878.	19,345.	17,350.	38,549.	38,731.	28,717.	21,350.	13,646.	11,970.	12,821.	13,565.
1980	15,209.	16,460.	17,804.	22,905.	52,407.	66,261.	57,464.	47,402.	44,685.	43,284.	44,491.	45,423.
1981	46,161.	47,111.	48,299.	51,044.	49,637.	43,066.	32,631.	24,605.	22,188.	23,386.	24,409.	25,369.
1982	27,153.	28,547.	30,107.	35,441.	67,378.	72,100.	63,948.	55,424.	49,708.	51,616.	53,903.	54,873.
1983	56,462.	58,470.	60,085.	63,559.	72,100.	72,100.	67,867.	60,461.	50,297.	40,420.	42,499.	45,461.
1984	47,562.	48,993.	47,722.	55,243.	72,100.	72,100.	64,857.	59,063.	51,586.	47,543.	43,056.	46,365.
1985	48,188.	50,165.	52,128.	60,762.	72,100.	66,596.	57,656.	45,577.	41,163.	42,313.	44,168.	45,540.
1986	47,113.	49,580.	52,212.	62,256.	72,100.	72,100.	63,560.	52,961.	46,916.	48,229.	49,374.	51,088.
1987	53,167.	54,959.	57,320.	61,840.	61,299.	54,866.	46,582.	39,707.	34,861.	33,208.	34,764.	36,433.
1988	38,291.	39,456.	41,396.	46,067.	52,538.	45,870.	34,634.	26,086.	21,969.	21,420.	21,829.	23,256.
1989	24,485.	25,945.	28,633.	30,316.	26,834.	20,338.	10,459.	5,619.	2,781.	1,299.	1,810.	2,299.
1990	2,790.	3,482.	4,525.	10,665.	10,494.	7,631.	399.	0.	0.	0.	158.	122.
1991	545.	1,142.	2,566.	5,603.	13,392.	16,496.	7,184.	526.	0.	0.	835.	1,391.
1992	2,169.	2,805.	4,596.	5,670.	1,125.	0.	0.	0.	0.	417.	1,102.	1,704.
1993	2,563.	3,590.	5,491.	10,864.	40,802.	48,323.	37,869.	30,155.	24,540.	0.	0.	0.

TABLE 4.

SCOTFIELD RESERVOIR SHORTAGES WITH NARROWS RESERVOIR - ACRE FEET

DATE 03-18-1994

TIME 10:39:24

NARROWS RESERVOIR ACTIVE CAPACITY IS 14,500. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL SHORTAGE
1946	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1947	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1948	0.	0.	0.	0.	0.	0.	0.	3,292.	1,362.	323.	0.	0.	4,978.
1949	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1950	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1951	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1952	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1953	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1954	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1955	0.	0.	0.	0.	0.	0.	0.	0.	4,200.	1,492.	0.	0.	5,692.
1956	0.	0.	0.	0.	0.	0.	0.	246.	4,525.	925.	0.	0.	5,695.
1957	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1958	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1959	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	509.	509.
1960	0.	0.	0.	0.	0.	0.	3,054.	3,514.	566.	0.	0.	0.	7,134.
1961	0.	0.	0.	0.	0.	19.	1,688.	645.	100.	0.	0.	0.	2,452.
1962	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.	827.	2,864.	0.	34.	3,725.
1964	0.	0.	0.	0.	0.	0.	0.	0.	3,169.	1,967.	0.	0.	5,135.
1965	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1967	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1968	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1969	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1970	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1971	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1972	0.	0.	0.	0.	0.	0.	0.	0.	3,678.	0.	0.	0.	3,678.
1973	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1974	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1975	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1976	0.	0.	0.	0.	0.	0.	0.	5,432.	2,879.	933.	200.	500.	9,944.
1977	900.	0.	0.	0.	1,442.	2,250.	3,295.	1,487.	1,161.	275.	27.	29.	10,866.
1978	23.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	43.
1979	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1980	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1983	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1984	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1985	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1986	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1987	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1988	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1990	0.	0.	0.	0.	0.	0.	0.	3,136.	964.	243.	0.	0.	4,344.
1991	0.	0.	0.	0.	0.	0.	0.	0.	2,593.	2,597.	0.	0.	5,190.
1992	0.	0.	0.	0.	0.	4,004.	1,601.	1,035.	447.	0.	0.	0.	7,087.
1993	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

GRAND TOTAL

76,471.

Water User Agencies
and Organizations

TABLE 5.

SCOTFIELD RESERVOIR SHORTAGES WITH NARROWS RESERVOIR - ACRE FEET

DATE 03-18-1994

TIME 10:51:05

NARROWS RESERVOIR ACTIVE CAPACITY IS 5,400. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL SHORTAGE
1946	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1947	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1948	0.	0.	0.	0.	0.	0.	0.	3,204.	1,362.	323.	0.	0.	4,890.
1949	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1950	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1951	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1952	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1953	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1954	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1955	0.	0.	0.	0.	0.	0.	0.	0.	3,941.	1,492.	0.	0.	5,433.
1956	0.	0.	0.	0.	0.	0.	0.	246.	4,525.	925.	0.	0.	5,695.
1957	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1958	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1959	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1960	0.	0.	0.	0.	0.	0.	0.	3,246.	566.	0.	0.	0.	3,813.
1961	0.	0.	0.	0.	0.	19.	1,688.	645.	100.	0.	0.	0.	2,452.
1962	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.	0.	1,857.	0.	34.	1,891.
1964	0.	0.	0.	0.	0.	0.	0.	0.	3,169.	1,967.	0.	0.	5,135.
1965	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1967	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1968	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1969	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1970	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1971	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1972	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1973	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1974	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1975	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1976	0.	0.	0.	0.	0.	0.	0.	1,479.	2,879.	933.	200.	500.	5,990.
1977	900.	0.	0.	0.	1,442.	2,250.	3,295.	1,487.	1,161.	275.	27.	29.	10,866.
1978	23.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	43.
1979	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1980	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1983	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1984	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1985	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1986	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1987	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1988	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1990	0.	0.	0.	0.	0.	0.	0.	3,136.	964.	243.	0.	0.	4,344.
1991	0.	0.	0.	0.	0.	0.	0.	0.	2,593.	2,597.	0.	0.	5,190.
1992	0.	0.	0.	0.	0.	4,004.	1,601.	1,035.	447.	0.	0.	0.	7,087.
1993	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

GRAND TOTAL

62,829.

TABLE 6.

NARROWS RESERVOIR ACTIVE STORAGE - ACRE FEET DATE 03-18-1994 TIME 10:37:12

NARROWS RESERVOIR ACTIVE CAPACITY IS 14,500. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	14,500.	14,417.	14,365.	14,293.
1947	14,192.	14,094.	14,029.	14,500.	14,500.	14,500.	12,866.	11,042.	10,066.	9,984.	9,940.	9,868.
1948	9,767.	9,665.	9,560.	9,834.	12,340.	12,903.	11,202.	9,168.	8,097.	7,922.	7,846.	7,765.
1949	7,677.	7,591.	7,532.	8,691.	13,136.	14,491.	12,882.	10,992.	9,973.	9,862.	9,775.	9,665.
1950	9,547.	9,434.	9,351.	9,899.	12,664.	13,962.	12,332.	10,438.	9,486.	9,367.	9,388.	9,313.
1951	9,211.	9,111.	9,036.	9,774.	12,944.	14,085.	12,489.	10,689.	9,700.	9,641.	9,603.	9,537.
1952	9,453.	9,373.	9,311.	9,908.	14,500.	14,500.	13,316.	11,678.	10,793.	10,727.	10,709.	10,636.
1953	10,538.	10,442.	10,371.	10,642.	12,855.	14,500.	12,961.	11,176.	10,221.	10,129.	10,108.	10,066.
1954	10,015.	9,977.	9,951.	10,813.	12,465.	12,761.	10,998.	9,938.	8,047.	7,938.	7,877.	7,783.
1955	7,683.	7,585.	7,511.	7,738.	10,177.	10,961.	9,269.	7,432.	6,372.	6,201.	6,091.	5,976.
1956	5,859.	5,745.	5,669.	6,494.	9,544.	10,182.	8,499.	6,483.	5,428.	5,261.	5,177.	5,066.
1957	4,955.	4,861.	4,802.	5,031.	7,522.	12,593.	11,346.	9,590.	8,642.	8,607.	8,609.	8,541.
1958	8,457.	8,379.	8,337.	8,796.	13,780.	14,500.	12,895.	11,065.	10,049.	9,917.	9,847.	9,759.
1959	9,667.	9,569.	9,481.	9,695.	11,440.	11,980.	10,264.	8,306.	7,272.	7,146.	7,060.	6,936.
1960	6,798.	6,669.	6,598.	6,890.	9,417.	10,066.	8,112.	6,099.	5,047.	4,926.	4,855.	4,772.
1961	4,661.	4,554.	4,455.	4,728.	5,860.	5,759.	3,844.	1,868.	850.	757.	700.	615.
1962	530.	497.	462.	1,341.	6,090.	8,053.	6,702.	4,978.	4,083.	4,004.	3,944.	3,838.
1963	3,701.	3,587.	3,474.	3,539.	6,524.	7,483.	5,873.	4,109.	3,071.	2,913.	2,827.	2,703.
1964	2,618.	2,539.	2,454.	2,575.	5,568.	7,335.	5,894.	4,140.	3,102.	2,943.	2,857.	2,809.
1965	2,765.	2,711.	2,643.	2,902.	5,877.	8,757.	7,469.	5,955.	5,294.	5,380.	5,420.	5,397.
1966	5,356.	5,320.	5,353.	6,432.	8,635.	8,962.	7,158.	5,340.	4,365.	4,336.	4,269.	4,193.
1967	4,092.	3,994.	3,910.	4,032.	7,049.	9,451.	7,986.	6,189.	5,249.	5,158.	5,099.	5,041.
1968	4,988.	4,940.	4,896.	5,076.	7,714.	10,484.	8,889.	7,140.	6,226.	6,186.	6,153.	6,082.
1969	5,995.	5,912.	5,855.	6,512.	12,929.	14,119.	12,581.	10,726.	9,786.	9,772.	9,777.	9,756.
1970	9,731.	9,682.	9,662.	9,837.	13,384.	14,500.	12,904.	10,993.	10,013.	9,947.	9,933.	9,965.
1971	10,026.	9,962.	9,916.	10,256.	12,989.	14,005.	12,318.	10,402.	9,417.	9,342.	9,310.	9,292.
1972	9,286.	9,267.	9,434.	10,145.	12,062.	12,454.	10,612.	8,630.	7,563.	7,485.	7,454.	7,396.
1973	7,328.	7,260.	7,218.	7,425.	11,278.	12,929.	11,327.	9,422.	8,457.	8,366.	8,322.	8,277.
1974	8,252.	8,203.	8,152.	8,363.	11,961.	12,531.	10,742.	8,773.	7,730.	7,697.	7,535.	7,440.
1975	7,355.	7,273.	7,188.	7,235.	8,903.	13,481.	12,271.	10,461.	9,490.	9,447.	9,437.	9,421.
1976	9,403.	9,376.	9,324.	9,541.	12,275.	12,708.	10,916.	8,883.	7,815.	7,640.	7,520.	7,396.
1977	7,272.	7,170.	7,071.	7,360.	7,334.	7,222.	5,292.	3,302.	2,270.	2,116.	1,996.	1,872.
1978	1,748.	1,635.	1,554.	2,049.	5,470.	9,207.	7,693.	5,916.	4,943.	4,739.	4,700.	4,610.
1979	4,518.	4,430.	4,339.	4,535.	7,842.	9,308.	7,629.	5,735.	4,733.	4,632.	4,560.	4,492.
1980	4,424.	4,360.	4,292.	4,742.	8,238.	12,259.	10,794.	8,936.	7,993.	7,925.	7,897.	7,841.
1981	7,779.	7,717.	7,704.	8,458.	10,340.	11,005.	9,219.	7,266.	6,261.	6,213.	6,171.	6,087.
1982	5,978.	5,872.	5,788.	6,353.	10,996.	13,224.	11,785.	9,961.	9,095.	9,305.	9,498.	9,584.
1983	9,630.	9,659.	9,740.	10,024.	12,378.	14,500.	14,043.	12,396.	11,573.	11,665.	11,766.	11,880.
1984	11,955.	12,011.	12,058.	12,355.	14,500.	14,500.	13,252.	11,498.	10,593.	10,653.	10,720.	10,787.
1985	10,840.	10,850.	10,864.	12,428.	14,500.	14,500.	12,947.	11,077.	10,106.	10,073.	10,098.	10,102.
1986	10,106.	10,125.	10,229.	11,183.	14,500.	14,500.	12,940.	11,082.	10,137.	10,138.	10,173.	10,135.
1987	10,032.	9,927.	9,842.	10,720.	12,329.	12,620.	10,836.	8,884.	7,865.	7,746.	7,670.	7,577.
1988	7,494.	7,416.	7,352.	7,781.	10,484.	10,938.	9,143.	7,201.	6,188.	6,083.	6,053.	6,003.
1989	5,949.	5,876.	5,864.	6,980.	8,546.	8,877.	7,108.	5,159.	4,172.	4,046.	4,095.	4,003.
1990	3,908.	3,823.	3,746.	4,597.	6,200.	6,655.	4,925.	2,938.	1,909.	1,757.	1,639.	1,551.
1991	1,464.	1,384.	1,306.	1,420.	4,259.	6,020.	4,413.	2,579.	1,554.	1,403.	1,368.	1,309.
1992	1,216.	1,117.	1,092.	1,809.	2,534.	2,462.	589.	0.	0.	0.	0.	0.
1993	0.	0.	5.	433.	5,697.	7,517.	5,946.	4,091.	3,124.	0.	0.	0.

Water User Agencies
and Organizations

TABLE 7.

NARROWS RESERVOIR ACTIVE STORAGE - ACRE FEET

DATE 03-10-1994

TIME 10:44:16

NARROWS RESERVOIR ACTIVE CAPACITY IS 5,400. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	5,400.	5,342.	5,290.	5,218.
1947	5,117.	5,019.	4,954.	5,400.	5,400.	5,400.	3,840.	2,082.	1,165.	1,116.	1,072.	1,000.
1948	899.	797.	692.	967.	3,489.	4,112.	2,488.	528.	0.	0.	0.	0.
1949	0.	0.	0.	1,160.	5,400.	5,400.	3,864.	2,041.	1,082.	1,004.	917.	806.
1950	689.	576.	492.	1,042.	4,022.	5,178.	3,620.	1,792.	899.	813.	834.	759.
1951	657.	357.	483.	1,221.	4,406.	5,400.	3,874.	2,139.	1,207.	1,179.	1,141.	1,076.
1952	991.	912.	849.	1,448.	5,400.	5,400.	4,288.	2,715.	1,885.	1,850.	1,832.	1,759.
1953	1,661.	1,565.	1,494.	1,765.	3,994.	5,400.	3,934.	2,215.	1,318.	1,259.	1,238.	1,196.
1954	1,145.	1,107.	1,081.	1,944.	3,611.	3,966.	2,282.	397.	0.	0.	0.	0.
1955	0.	0.	0.	227.	2,681.	3,521.	1,900.	132.	0.	0.	0.	0.
1956	0.	0.	0.	825.	3,887.	4,565.	2,934.	969.	0.	0.	0.	0.
1957	0.	0.	0.	229.	2,732.	5,400.	4,213.	2,511.	1,610.	1,602.	1,604.	1,536.
1958	1,452.	1,374.	1,332.	1,791.	5,400.	5,400.	3,868.	2,104.	1,148.	1,049.	979.	891.
1959	799.	701.	613.	828.	2,589.	3,194.	1,560.	0.	0.	0.	0.	0.
1960	0.	0.	0.	293.	2,833.	3,532.	1,913.	0.	0.	0.	0.	0.
1961	0.	0.	0.	274.	1,417.	1,359.	0.	0.	0.	0.	0.	0.
1962	0.	0.	0.	879.	5,400.	5,400.	4,074.	2,374.	1,500.	1,432.	1,373.	1,266.
1963	1,129.	1,016.	903.	968.	3,959.	4,938.	3,353.	1,614.	741.	596.	510.	386.
1964	301.	221.	137.	258.	3,257.	5,043.	3,624.	1,892.	873.	727.	641.	592.
1965	549.	494.	426.	685.	3,667.	5,400.	4,143.	2,657.	2,021.	2,121.	2,161.	2,138.
1966	2,097.	2,062.	2,095.	3,173.	5,383.	5,400.	3,629.	1,843.	897.	885.	817.	742.
1967	641.	543.	459.	581.	3,606.	5,400.	3,972.	2,209.	1,300.	1,226.	1,167.	1,109.
1968	1,057.	1,008.	964.	1,145.	3,791.	5,400.	3,850.	2,143.	1,267.	1,248.	1,215.	1,144.
1969	1,057.	973.	916.	1,574.	5,400.	5,400.	3,933.	2,142.	1,259.	1,277.	1,282.	1,261.
1970	1,236.	1,187.	1,167.	1,342.	4,904.	5,400.	3,877.	2,034.	1,112.	1,079.	1,065.	1,098.
1971	1,159.	1,095.	1,049.	1,390.	4,137.	5,211.	3,596.	1,747.	821.	780.	748.	730.
1972	723.	705.	672.	1,583.	3,516.	3,966.	2,201.	293.	0.	0.	0.	0.
1973	0.	0.	0.	208.	4,075.	5,400.	3,860.	2,013.	1,100.	1,038.	994.	949.
1974	924.	875.	824.	1,036.	4,647.	5,265.	3,539.	1,627.	637.	544.	472.	376.
1975	292.	209.	124.	172.	1,855.	5,400.	4,256.	2,505.	1,587.	1,572.	1,562.	1,546.
1976	1,528.	1,502.	1,449.	1,667.	4,414.	4,899.	3,174.	1,205.	195.	53.	0.	0.
1977	0.	0.	0.	290.	280.	238.	0.	0.	0.	0.	0.	0.
1978	0.	0.	0.	496.	3,920.	5,400.	3,920.	2,176.	1,233.	1,046.	1,007.	916.
1979	825.	736.	645.	842.	4,157.	5,400.	3,756.	1,897.	926.	843.	771.	703.
1980	636.	571.	503.	954.	4,457.	5,400.	3,993.	2,187.	1,292.	1,250.	1,222.	1,166.
1981	1,104.	1,042.	1,029.	1,784.	3,678.	4,390.	2,666.	771.	0.	0.	0.	0.
1982	0.	0.	0.	566.	5,220.	5,400.	4,025.	2,260.	1,446.	1,584.	1,877.	1,963.
1983	2,010.	2,039.	2,120.	2,404.	4,771.	5,400.	5,014.	3,429.	2,658.	2,779.	2,880.	2,994.
1984	3,069.	3,125.	3,172.	3,469.	5,400.	5,400.	4,224.	2,535.	1,687.	1,778.	1,845.	1,912.
1985	1,966.	1,975.	1,989.	3,553.	5,400.	5,400.	3,920.	2,116.	1,205.	1,204.	1,230.	1,233.
1986	1,237.	1,257.	1,360.	2,315.	5,400.	5,400.	3,913.	2,122.	1,236.	1,269.	1,304.	1,266.
1987	1,163.	1,058.	973.	1,852.	3,476.	3,827.	2,122.	247.	0.	0.	0.	0.
1988	0.	0.	0.	429.	3,147.	3,654.	1,929.	55.	0.	0.	0.	0.
1989	0.	0.	0.	1,117.	2,694.	3,072.	1,364.	0.	0.	0.	49.	0.
1990	0.	0.	0.	852.	2,463.	2,950.	1,264.	0.	0.	0.	0.	0.
1991	0.	0.	0.	115.	2,957.	4,730.	3,136.	1,316.	304.	162.	127.	67.
1992	0.	0.	0.	717.	1,444.	1,385.	0.	0.	0.	0.	0.	0.
1993	0.	0.	5.	433.	5,400.	5,400.	3,850.	2,015.	1,066.	0.	0.	0.

TABLE 8.

NARROWS RESERVOIR RELEASES TO COTTONWOOD CANYON - ACRE FEET										DATE 03-18-1994		TIME 10:35:32		
NARROWS RESERVOIR ACTIVE CAPACITY IS 14,500. AC.FT.														
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SHORTAGE
1946	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1947	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1948	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1949	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1950	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1951	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1952	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1953	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1954	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1955	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1956	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1957	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1958	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1959	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1960	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1961	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1962	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1963	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1964	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1965	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1966	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1967	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1968	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1969	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1970	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1971	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1972	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1973	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1974	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1975	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1976	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1977	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1978	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1979	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1980	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1981	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1982	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1983	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1984	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1985	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1986	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1987	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1988	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1989	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1990	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1991	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1992	124	113	124	0	0	0	1800	562	0	56	25	18	2,822.	2,578.
1993	40	53	124	0	0	0	1800	1900	971	124	120	124	5,257.	143.
GRAND TOTALS													256,479.	2,721.

Water User Agencies
and Organizations

TABLE 9.

NARROWS RESERVOIR RELEASES TO COTTONWOOD CANYON - ACRE FEET

DATE 03-18-1994

TIME 10:43:10

NARROWS RESERVOIR ACTIVE CAPACITY IS 5,400. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SHORTAGE
1946	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1947	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1948	124	113	124	0	0	0	1800	1900	498	0	44	43	4,646.	754.
1949	36	27	65	0	0	0	1800	1900	971	124	120	124	5,167.	233.
1950	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1951	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1952	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1953	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1954	124	113	124	0	0	0	1800	1900	446	50	59	30	4,647.	753.
1955	23	15	51	0	0	0	1800	1900	108	0	10	10	3,916.	1,484.
1956	6	0	49	0	0	0	1800	1900	932	0	36	13	4,736.	664.
1957	13	20	65	0	0	0	1800	1900	971	124	120	124	5,137.	263.
1958	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1959	124	113	124	0	0	0	1800	1583	10	31	33	0	3,819.	1,581.
1960	0	0	53	0	0	0	1800	1861	0	29	49	42	3,833.	1,567.
1961	13	6	25	0	0	0	1306	0	0	37	63	39	1,489.	3,911.
1962	39	79	90	0	0	0	1800	1900	971	124	120	124	5,247.	153.
1963	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1964	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1965	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1966	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1967	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1968	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1969	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1970	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1971	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1972	124	113	124	0	0	0	1800	1900	331	80	89	66	4,627.	773.
1973	56	45	82	0	0	0	1800	1900	971	124	120	124	5,222.	178.
1974	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1975	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1976	124	113	124	0	0	0	1800	1900	971	124	53	0	5,209.	191.
1977	0	11	25	0	0	0	215	0	0	0	0	0	251.	5,149.
1978	0	0	43	0	0	0	1800	1900	971	124	120	124	5,082.	318.
1979	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1980	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1981	124	113	124	0	0	0	1800	1900	791	106	78	40	5,075.	325.
1982	16	6	40	0	0	0	1800	1900	971	124	120	124	5,101.	299.
1983	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1984	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1985	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1986	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1987	124	113	124	0	0	0	1800	1900	270	39	44	31	4,445.	955.
1988	42	35	60	0	0	0	1800	1900	78	48	90	74	4,127.	1,273.
1989	70	40	112	0	0	0	1800	1378	37	20	120	81	3,658.	1,742.
1990	29	28	47	0	0	0	1800	1223	0	0	2	36	3,164.	2,236.
1991	37	33	46	0	0	0	1800	1900	971	124	120	124	5,155.	245.
1992	98	15	99	0	0	0	1332	0	0	56	25	18	1,642.	3,758.
1993	40	53	124	0	0	0	1800	1900	971	124	120	124	5,257.	143.

GRAND TOTALS

230,252. 28,948.

Robert J. Murdock, P.E.
2964 East 3135 South
Salt Lake City, Utah 84109

Phone (801) 487-0258
April 5, 1994

Regional Director
Bureau of Reclamation
125 South State St.
Salt Lake City, Utah 84111

Re: Draft EIS Narrows Project - Comments

Dear Sir,

At the hearing on the Narrows Project Draft EIS held in Price March 30, 1994 I made a statement and submitted written notes associated with the statement. These comments and information are in addition to that presented March 30, 1994.

At the hearing March 30 I referred to an operation study of the Narrows Project and Scofield Reservoir that I have performed. Several others that had access to my study also referred to it. I feel it proper to include the result of my study to support the comments that have been made that refer to it. Attached are tables that are the result of the study.

My study is a monthly operation study showing end of month figures in 9 tables. Some months on Table 1 list the annual high or low that occurred during the month but not at its end. Table 1 lists the historic active storage contents of Scofield Reservoir. The 0s in 1946 and 1993 are beyond the period of record used and figures on other tables for similar months should be disregarded.

Tables 2 & 3 are also the active storage contents of Scofield Reservoir assuming the Narrows Reservoir at the indicated capacity was operating concurrently with Scofield Reservoir. The same historic bypass of prior rights and storage releases were made from Scofield Reservoir. Flood releases and spills from Scofield Reservoir were retained to the extent there was capacity to hold them.

On Tables 2 & 3 the months showing 0 are months when the active storage pool of Scofield Reservoir was empty at the end of the month and the historic active storage release was not fully satisfied. Tables 4 & 5 show the amounts of water that was historically released from Scofield Reservoir that would not have been available for release if the Narrows Project were in operation. These figures are not the historic water shortages of the Price River below Scofield Reservoir. The amounts shown on Tables 4 & 5 should be added to the historic water supply shortages of the Price River indicated by several at the hearing.

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Tables 6 thru 9 show the operation result at the Narrows Reservoir. Two significant things to note. One, the larger reservoir has almost no shortage to Sanpete, but the size of the reservoir used for the study greatly exceeds (about 4,500 acre-feet) the water right approval for the reservoir. Second, there are significant shortages to Sanpete with the smaller reservoir. The shortage exceed 11 percent.

The historic active storage contents record of Scofield Reservoir begins several years before 1946. I started with 1946 because it was the year Scofield was enlarged to its present capacity. The starting contents I used for Scofield Reservoir was from the historic record. I assumed the Narrows Reservoir to be full at the start of the study the same as was done for the DEIS. Assuming it less than full at start would show less benefit to Sanpete and a greater negative impact upon Scofield Reservoir and the Price River.

COMMENTS:

1. The reduction of historic active storage releases shown on Tables 4 & 5 are significant reductions of water supply. During many of these years there was already great shortage with water going to more essential uses such as the municipal treatment plant and the power plant. During many years the Narrows induced shortages to Scofield Reservoir will directly impact water supply for drinking water, fire protection and generation of electricity at Castle Gate. The DEIS did not adequately evaluate these negative impacts.
2. The DEIS is in error in many of the points it analyses because it fails to use the full available hydrologic record that is available. It uses a shorter period of data that give different results than if the longer period were used. The operation study starts with Scofield Reservoir about 6,000 acre-feet higher than it would have been October 1959 if the full record were used. The DEIS operation study starts with the Narrows Reservoir full. It is in error because it fails to show the impacts of filling the Narrows Reservoir. These two errors impact Scofield Reservoir about 23,000 acre-feet.
3. The DEIS fails to adequately address negative impacts to the flat water fishery of Scofield Reservoir. My operation study indicate the average surface area of Scofield Reservoir will be reduced 302 acres or 253 acres with Narrows Reservoir at 14,500 and 5,400 acre-feet active storage respectfully. With the Recommended Plan 2/3 of what is gained at the Narrows site is lost at Scofield. As per DEIS page 3-38,9 the loss would be 9,060 angler days per year not 4,500. With the Small Reservoir Plan 450 angler days per year more are lost at Scofield than gained at the Narrows.

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4. Winter releases to Cottonwood Creek amount to 720 acre-feet per year. When Wales Reservoir can not store this water its benefits are lost to the project area. An operation study of the Wales Reservoir in conjunction with the winter releases from the Narrows Reservoir is needed to evaluate the lost benefits to either irrigation or the fishery of Cottonwood Creek.
5. The HEP studies should be done before the DEIS is prepared to properly evaluate and present the affects to impact and mitigation lands.
6. There is no information in the DEIS to indicate that a safe dam can be built upon the proposed site, or to indicate that adequate materials exist within reasonable haul distances to build the dam. There are no drill logs, no test pit logs, no water pressure tests of drill holes, no soil tests, no water table data for dam site or reservoir basin, no detail surface geology study of the dam site, no profiles, nothing. The DEIS does say the dam site is on the North Horn formation. This is the same formation that is the cause of 104 landslides in nearby Cottonwood Canyon as recorded in the DEIS page 3-18. The North Horn formation is notorious for landslides and instability throughout the Wasatch Plateau. Is the dam site the result of a landslide? The DEIS is wholly inadequate in providing assurance that a safe dam can be built at the proposed site.
7. The DEIS proposes to narrow the channel of Gooseberry Creek below the dam site. This is a bad idea. The size of the channel is the result of infrequent large snow melt floods. Most snow melt runoff will be retained in the Narrows Reservoir. However, the big snow melt floods will fill the reservoir and spill for days at nearly the same flow rate as they have historically run in the channel. A smaller channel will be gutted, Lower Gooseberry Reservoir will get an unnecessary load of sediment and the stream channel fishery benefits will be lost. Who is going to remove the sediment from Lower Gooseberry Reservoir and rebuild the smaller channel each time it happens?

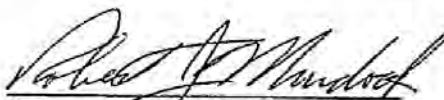
The proposed project has not been planned well. It proposes many features that have no water rights approved for the use and improperly sizes the proposed reservoir with respect to the approver water rights. The past fights of this project have revolved around water rights and I would think the planners would be sensitive to get those aspects of the plan right this time, but they have not.

It is planned for very expensive supplemental irrigation ONLY in Sanpete County, and will cause water shortages for irrigation, culinary, fire protection, and power plant use in Carbon County. It will damage existing fisheries. The DEIS does not adequately address the negative impacts.

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The proposed project ignores extensive resources of water in Sanpitch Valley that are being very very poorly used while at the same time seeks to take part of a short supply of water away from Carbon County that is making good and critical use of it. There has got to be a better plan whereby the small increase of water supply can be developed with added storage, and the project structured in such a way that it will not negatively impact the water supply of either county but give them both some improvement and added stability of water supply. It can be done.

Sincerely,


Robert J. Murdock, P.E.

cc: Richard Lee

Robert J. Murdock, P.E.
2964 East 3135 South
Salt Lake City, Utah 84109
Phone (801) 487-0258
December 12, 1994

Robert L. Morgan, State Engineer
Division of Water Rights
1636 West North Temple, Suite 220
Salt Lake City, Utah 84116

Re: Operation study of Scofield and Narrows Reservoirs

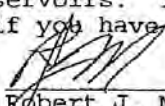
Dear Bob,

Enclosed is a print out of data related to my operation study of Scofield Reservoir with the proposed Narrows Reservoir at an active capacity of 10,000 acre-feet as per your request at our meeting with Sheldon Talbot at CUWCD office last Friday. A couple of things I do not remember talking about Friday is that the evaporation is calculated based upon the average first of month and last of month contents. The end of month is calculated by a loop that cuts off when the error is less than 1 acre-foot. Also, when Scofield storage is empty no flow is retained in the Narrows Reservoir. The prior direct flow rights are passed through.

Table 11 is the same as Table 1 you already have. Table 12 is program print out that should replace the copied scratch sheet you got Friday of the historic unused releases and spills from Scofield Reservoir. Table 13 is the flow reduction below Narrows Reservoir which is the reduction of flow into Scofield Reservoir. The program used a minimum in stream flow in Gooseberry Creek below the Narrows dam of 60 acre-feet per month. The few negative numbers on Table 13 indicate the natural flow was less than 60 acre-feet for those months and this amount of water was drawn from Narrows Reservoir storage to increase the in stream flow to the minimum.

Table 14 is the reduction of evaporation from Scofield Reservoir with the Narrows Reservoir. The negative numbers on this table indicate an increase of evaporation loss with the Narrows Reservoir because the program retained historic unused spills and flood releases and during years of excessive flooding the program had Scofield Reservoir higher than it had been historically because the program has no flood management criteria for Scofield. It only tries to maximize the water available for use from the two reservoirs. I believe the other tables are self explanatory. Call if you have any questions.

Sincerely,


Robert J. Murdock, P.E.

cc: Sheldon Talbot
Richard Lee




TABLE 12

HISTORIC UNUSED SCOFIELD RES RELEASE & SPILL - ACRE FEET

DATE 12-10-1994

TIME 17:37:12

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1947	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1948	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1949	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1950	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1951	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1952	0.	0.	0.	0.	18,020.	25,930.	1,100.	0.	0.	0.	0.	0.
1953	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1954	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1955	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1956	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1957	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1958	0.	0.	0.	5,580.	2,990.	5,970.	0.	0.	0.	0.	0.	0.
1959	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1960	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1961	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1962	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1964	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1965	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1967	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1968	0.	0.	0.	0.	700.	13,930.	0.	0.	0.	0.	0.	0.
1969	0.	200.	9,080.	6,400.	3,700.	1,500.	0.	0.	0.	0.	0.	0.
1970	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1971	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1972	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1973	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1974	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1975	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1976	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1977	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1979	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1980	0.	0.	1,400.	6,550.	5,300.	17,750.	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	6,000.	20,000.	0.	0.	0.	0.	0.	380.
1983	2,260.	8,150.	10,820.	5,800.	0.	20,000.	3,000.	0.	0.	0.	0.	0.
1984	0.	0.	10,000.	19,220.	5,000.	5,000.	0.	0.	0.	0.	0.	0.
1985	0.	0.	0.	6,400.	8,100.	0.	0.	0.	0.	0.	0.	0.
1986	0.	0.	8,480.	9,000.	8,600.	7,000.	0.	0.	0.	0.	0.	0.
1987	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1988	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1990	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1991	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1992	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1993	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

Water User Agencies
and Organizations

TABLE 13

FLOW REDUCTION INTO SCOFIELD RESERVOIR - ACRE FEET

DATE 12-10-1994

TIME 17:33:33

NARROWS RESERVOIR ACTIVE CAPACITY IS 10,000. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	0.	109.	69.	51.
1947	23.	15.	59.	462.	30.	130.	353.	220.	104.	99.	77.	51.
1948	23.	11.	19.	276.	2,537.	707.	274.	0.	0.	0.	44.	43.
1949	36.	27.	65.	1,160.	4,476.	1,249.	377.	154.	61.	70.	33.	13.
1950	6.	-0.	40.	550.	2,996.	1,247.	353.	147.	125.	60.	141.	50.
1951	22.	13.	49.	739.	3,202.	1,290.	388.	243.	89.	121.	82.	59.
1952	39.	33.	62.	599.	4,259.	130.	804.	409.	198.	117.	102.	51.
1953	26.	16.	53.	272.	2,246.	1,668.	448.	260.	125.	90.	100.	81.
1954	73.	75.	98.	863.	1,684.	440.	211.	73.	79.	67.	59.	30.
1955	23.	15.	51.	228.	2,467.	917.	269.	185.	0.	0.	10.	10.
1956	6.	-1.	49.	826.	3,077.	766.	273.	0.	0.	0.	36.	13.
1957	13.	20.	65.	229.	2,516.	5,200.	728.	280.	124.	143.	122.	56.
1958	39.	36.	82.	459.	5,016.	181.	381.	214.	65.	49.	51.	36.
1959	31.	15.	37.	215.	1,776.	680.	252.	70.	32.	47.	33.	-0.
1960	-14.	-16.	53.	294.	2,554.	777.	0.	0.	0.	45.	49.	42.
1961	13.	6.	25.	274.	1,155.	0.	0.	0.	0.	54.	63.	39.
1962	39.	79.	90.	880.	4,768.	2,073.	588.	280.	151.	83.	60.	18.
1963	-13.	-1.	11.	66.	3,007.	1,069.	323.	233.	0.	0.	34.	0.
1964	39.	33.	39.	122.	3,013.	1,873.	491.	243.	0.	0.	34.	76.
1965	80.	58.	56.	260.	2,996.	2,991.	658.	496.	392.	253.	160.	100.
1966	83.	78.	157.	1,079.	2,230.	449.	141.	189.	72.	134.	53.	49.
1967	23.	15.	39.	123.	3,040.	2,521.	485.	216.	113.	76.	61.	66.
1968	72.	64.	80.	181.	2,662.	2,777.	363.	271.	145.	130.	87.	53.
1969	37.	30.	67.	658.	3,987.	130.	447.	188.	139.	166.	125.	103.
1970	99.	64.	104.	176.	3,580.	766.	390.	134.	99.	116.	106.	157.
1971	185.	49.	78.	342.	2,764.	1,166.	296.	125.	91.	105.	88.	106.
1972	118.	94.	291.	712.	1,949.	534.	130.	49.	65.	97.	89.	66.
1973	56.	45.	82.	208.	3,882.	1,792.	374.	130.	107.	86.	76.	79.
1974	99.	64.	73.	213.	3,628.	712.	184.	62.	25.	52.	48.	29.
1975	39.	30.	39.	49.	1,695.	4,714.	772.	231.	106.	137.	110.	108.
1976	106.	87.	71.	219.	2,764.	577.	181.	0.	0.	0.	0.	0.
1977	0.	11.	25.	290.	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	43.	496.	3,439.	3,850.	434.	235.	78.	-38.	81.	33.
1979	33.	24.	33.	197.	3,331.	1,587.	269.	117.	48.	64.	49.	56.
1980	56.	49.	56.	451.	3,520.	3,322.	507.	173.	127.	107.	92.	68.
1981	62.	51.	111.	755.	1,911.	799.	176.	68.	55.	122.	78.	40.
1982	16.	6.	40.	566.	4,670.	1,263.	539.	214.	209.	398.	313.	210.
1983	171.	142.	205.	285.	2,386.	897.	1,533.	405.	263.	277.	221.	238.
1984	200.	169.	171.	298.	2,081.	130.	739.	293.	177.	243.	187.	191.
1985	178.	123.	138.	1,565.	2,005.	130.	434.	174.	110.	148.	145.	127.
1986	128.	133.	228.	955.	3,247.	130.	426.	187.	135.	182.	155.	86.
1987	21.	8.	39.	880.	1,641.	434.	189.	80.	50.	56.	44.	31.
1988	42.	35.	60.	430.	2,732.	588.	166.	79.	46.	65.	90.	74.
1989	70.	40.	112.	1,117.	1,592.	453.	175.	57.	59.	37.	169.	32.
1990	29.	28.	47.	853.	1,625.	561.	195.	0.	0.	0.	2.	36.
1991	37.	33.	46.	115.	2,856.	1,857.	312.	149.	0.	0.	85.	64.
1992	31.	15.	99.	718.	739.	0.	0.	0.	0.	72.	25.	18.
1993	40.	53.	129.	428.	5,281.	1,927.	363.	142.	71.	0.	0.	0.

TABLE 15

SCOFIELD RESERVOIR STORAGE WITH HARROWS RESERVOIR - ACRE FEET

DATE 12-10-1994

TIME 17:40:37

HARROWS RESERVOIR ACTIVE CAPACITY IS 10,000. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	1,450.	1,632.	3,274.	4,603.
1947	5,509.	6,224.	8,016.	15,014.	35,086.	33,161.	21,718.	17,210.	11,219.	7,972.	8,955.	9,704.
1948	11,181.	12,070.	13,551.	17,775.	23,344.	14,977.	3,653.	0.	0.	0.	1,435.	2,252.
1949	3,386.	4,459.	5,834.	12,284.	33,014.	38,500.	27,874.	16,676.	10,975.	10,343.	11,709.	13,296.
1950	15,190.	16,190.	17,649.	24,300.	40,316.	38,324.	30,651.	18,686.	13,744.	11,834.	13,193.	14,043.
1951	15,922.	17,508.	18,759.	22,921.	36,439.	32,833.	20,175.	15,364.	7,612.	6,381.	7,299.	8,540.
1952	11,100.	12,467.	14,605.	23,708.	70,485.	72,100.	63,272.	57,541.	52,425.	48,499.	48,797.	48,745.
1953	50,919.	53,103.	55,649.	58,477.	60,529.	58,956.	46,807.	39,347.	30,823.	28,134.	29,534.	29,853.
1954	31,380.	32,005.	34,007.	35,443.	30,263.	19,848.	12,381.	5,381.	3,309.	2,668.	3,058.	3,648.
1955	4,905.	6,100.	7,349.	10,422.	19,267.	14,609.	5,163.	1,277.	0.	0.	740.	2,181.
1956	3,714.	4,755.	6,427.	11,242.	22,974.	16,757.	6,486.	0.	0.	0.	314.	1,261.
1957	2,518.	3,446.	4,803.	7,835.	22,516.	43,850.	34,876.	31,649.	27,671.	24,954.	26,232.	27,176.
1958	28,337.	29,501.	31,119.	34,540.	63,721.	63,224.	48,552.	37,048.	32,494.	29,451.	29,801.	29,564.
1959	30,433.	32,018.	33,381.	31,567.	29,996.	22,647.	13,350.	7,946.	2,870.	1,330.	707.	127.
1960	430.	1,327.	2,654.	5,142.	11,110.	5,245.	0.	0.	0.	449.	520.	239.
1961	466.	590.	1,955.	3,902.	2,909.	343.	0.	0.	0.	282.	329.	628.
1962	819.	1,710.	2,510.	11,912.	32,750.	31,718.	21,797.	12,394.	7,330.	7,701.	7,641.	7,223.
1963	7,036.	8,636.	10,626.	12,361.	17,475.	14,308.	3,480.	77.	0.	0.	306.	0.
1964	301.	587.	1,748.	5,328.	22,142.	23,455.	11,901.	2,444.	0.	0.	526.	1,051.
1965	3,170.	4,012.	5,256.	9,298.	29,022.	45,499.	42,424.	39,102.	33,975.	31,660.	31,999.	32,999.
1966	33,916.	35,138.	36,881.	43,703.	46,292.	39,430.	28,216.	17,558.	13,113.	11,853.	12,101.	11,752.
1967	14,529.	15,714.	17,675.	19,753.	35,242.	42,930.	33,888.	23,812.	18,629.	15,631.	16,070.	16,304.
1968	17,432.	18,368.	20,088.	23,008.	41,778.	50,226.	39,559.	35,377.	24,414.	22,335.	22,748.	23,695.
1969	25,158.	26,828.	28,141.	38,884.	66,902.	64,888.	54,660.	45,991.	40,970.	42,113.	42,488.	43,185.
1970	44,386.	46,122.	47,018.	47,143.	60,069.	57,636.	47,294.	35,707.	28,453.	28,063.	28,457.	29,100.
1971	30,315.	32,566.	34,688.	41,547.	55,395.	50,883.	38,066.	27,520.	21,803.	21,541.	22,153.	22,747.
1972	24,829.	25,535.	28,244.	32,033.	34,104.	28,964.	14,087.	4,834.	86.	1,913.	2,224.	2,558.
1973	3,102.	3,958.	5,276.	7,170.	41,023.	43,227.	34,384.	23,983.	16,899.	14,687.	15,312.	16,033.
1974	17,933.	18,370.	19,797.	22,086.	37,389.	29,308.	18,423.	7,388.	2,508.	1,906.	2,358.	1,829.
1975	2,490.	3,160.	4,720.	6,075.	20,433.	33,183.	26,713.	14,487.	7,196.	4,501.	5,891.	6,483.
1976	6,878.	7,591.	8,519.	11,803.	21,691.	14,835.	3,137.	0.	0.	0.	0.	0.
1977	0.	689.	1,763.	1,977.	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	2,357.	8,264.	29,058.	37,215.	26,329.	17,144.	12,011.	10,735.	12,054.	13,221.
1979	14,688.	15,664.	17,131.	15,136.	36,339.	36,276.	26,280.	18,931.	11,247.	9,583.	10,434.	11,178.
1980	12,822.	14,073.	15,417.	20,518.	50,023.	61,602.	52,826.	42,784.	40,084.	38,693.	39,901.	40,833.
1981	41,571.	42,520.	45,709.	46,454.	45,051.	38,501.	28,097.	20,103.	17,715.	18,930.	19,952.	20,912.
1982	22,696.	24,090.	25,650.	30,985.	62,926.	72,100.	63,940.	55,424.	49,708.	51,616.	53,903.	54,873.
1983	56,462.	58,470.	60,085.	63,559.	72,100.	72,100.	67,867.	60,461.	50,297.	40,420.	42,499.	45,461.
1984	47,562.	48,993.	47,722.	55,243.	72,100.	72,100.	64,857.	59,063.	51,586.	47,543.	43,056.	46,365.
1985	48,188.	50,163.	52,128.	60,762.	72,100.	66,565.	57,625.	45,545.	41,132.	42,282.	44,137.	45,509.
1986	47,081.	49,549.	52,181.	62,225.	72,100.	72,100.	63,560.	52,961.	46,916.	48,229.	49,374.	51,088.
1987	53,167.	54,959.	57,320.	61,840.	61,299.	54,866.	46,582.	39,707.	34,861.	33,208.	34,764.	36,433.
1988	38,291.	39,456.	41,396.	46,067.	52,538.	45,870.	34,634.	26,086.	21,969.	21,420.	21,829.	23,256.
1989	24,485.	25,945.	28,633.	30,316.	26,834.	20,338.	10,459.	5,619.	2,781.	1,299.	1,810.	2,299.
1990	2,790.	3,482.	4,525.	10,665.	10,494.	7,631.	399.	0.	0.	0.	158.	122.
1991	545.	1,142.	2,566.	5,603.	13,392.	16,496.	7,184.	526.	0.	0.	835.	1,391.
1992	2,169.	2,805.	4,596.	5,670.	1,125.	0.	0.	0.	0.	417.	1,102.	1,704.
1993	2,563.	3,590.	5,491.	10,864.	40,499.	46,197.	35,755.	28,053.	22,450.	0.	0.	0.

Water User Agencies
and Organizations

TABLE 16

SPILLS OF SCOFIELD RESERVOIR (> 72,100 A.F.) - ACRE FEET

DATE 12-10-1994

TIME 17:35:56

NARROWS RESERVOIR ACTIVE CAPACITY IS 10,000. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1947	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1948	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1949	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1950	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1951	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1952	0.	0.	0.	0.	0.	14,282.	0.	0.	0.	0.	0.	0.
1953	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1954	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1955	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1956	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1957	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1958	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1959	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1960	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1961	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1962	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1964	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1965	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1967	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1968	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1969	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1970	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1971	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1972	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1973	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1974	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1975	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1976	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1977	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1979	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1980	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	4,673.	0.	0.	0.	0.	0.	0.
1983	0.	0.	0.	0.	14,555.	30,084.	0.	0.	0.	0.	0.	0.
1984	0.	0.	0.	0.	18,441.	15,745.	0.	0.	0.	0.	0.	0.
1985	0.	0.	0.	0.	8,054.	0.	0.	0.	0.	0.	0.	0.
1986	0.	0.	0.	0.	23,571.	1,665.	0.	0.	0.	0.	0.	0.
1987	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1988	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1990	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1991	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1992	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1993	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

TABLE 17

SCOFIELD RESERVOIR SHORTAGES WITH NARROWS RESERVOIR - ACRE FEET

DATE 12-10-1994

TIME 17:41:53

NARROWS RESERVOIR ACTIVE CAPACITY IS 10,000 AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL SHORTAGE
1946	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1947	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1948	0.	0.	0.	0.	0.	0.	0.	3,254.	1,362.	323.	0.	0.	4,939.
1949	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1950	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1951	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1952	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1953	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1954	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1955	0.	0.	0.	0.	0.	0.	0.	0.	4,093.	1,492.	0.	0.	5,586.
1956	0.	0.	0.	0.	0.	0.	0.	246.	4,525.	925.	0.	0.	5,695.
1957	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1958	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1959	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1960	0.	0.	0.	0.	0.	0.	2,931.	3,514.	566.	0.	0.	0.	7,012.
1961	0.	0.	0.	0.	0.	19.	1,688.	645.	100.	0.	0.	0.	2,452.
1962	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.	827.	2,864.	0.	34.	3,725.
1964	0.	0.	0.	0.	0.	0.	0.	0.	3,169.	1,967.	0.	0.	5,135.
1965	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1967	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1968	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1969	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1970	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1971	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1972	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1973	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1974	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1975	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1976	0.	0.	0.	0.	0.	0.	0.	5,361.	2,879.	933.	200.	500.	9,873.
1977	900.	0.	0.	0.	1,442.	2,250.	3,295.	1,487.	1,161.	275.	27.	29.	10,866.
1978	23.	19.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	43.
1979	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1980	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1983	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1984	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1985	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1986	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1987	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1988	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1990	0.	0.	0.	0.	0.	0.	0.	3,136.	984.	243.	0.	0.	4,344.
1991	0.	0.	0.	0.	0.	0.	0.	0.	2,593.	2,597.	0.	0.	5,190.
1992	0.	0.	0.	0.	0.	4,004.	1,601.	1,035.	447.	0.	0.	0.	7,087.
1993	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GRAND TOTAL													71,946.

Water User Agencies
and Organizations

TABLE 18

NARROWS RESERVOIR ACTIVE STORAGE - ACRE FEET

DATE 12-10-1994

TIME 17:39:22

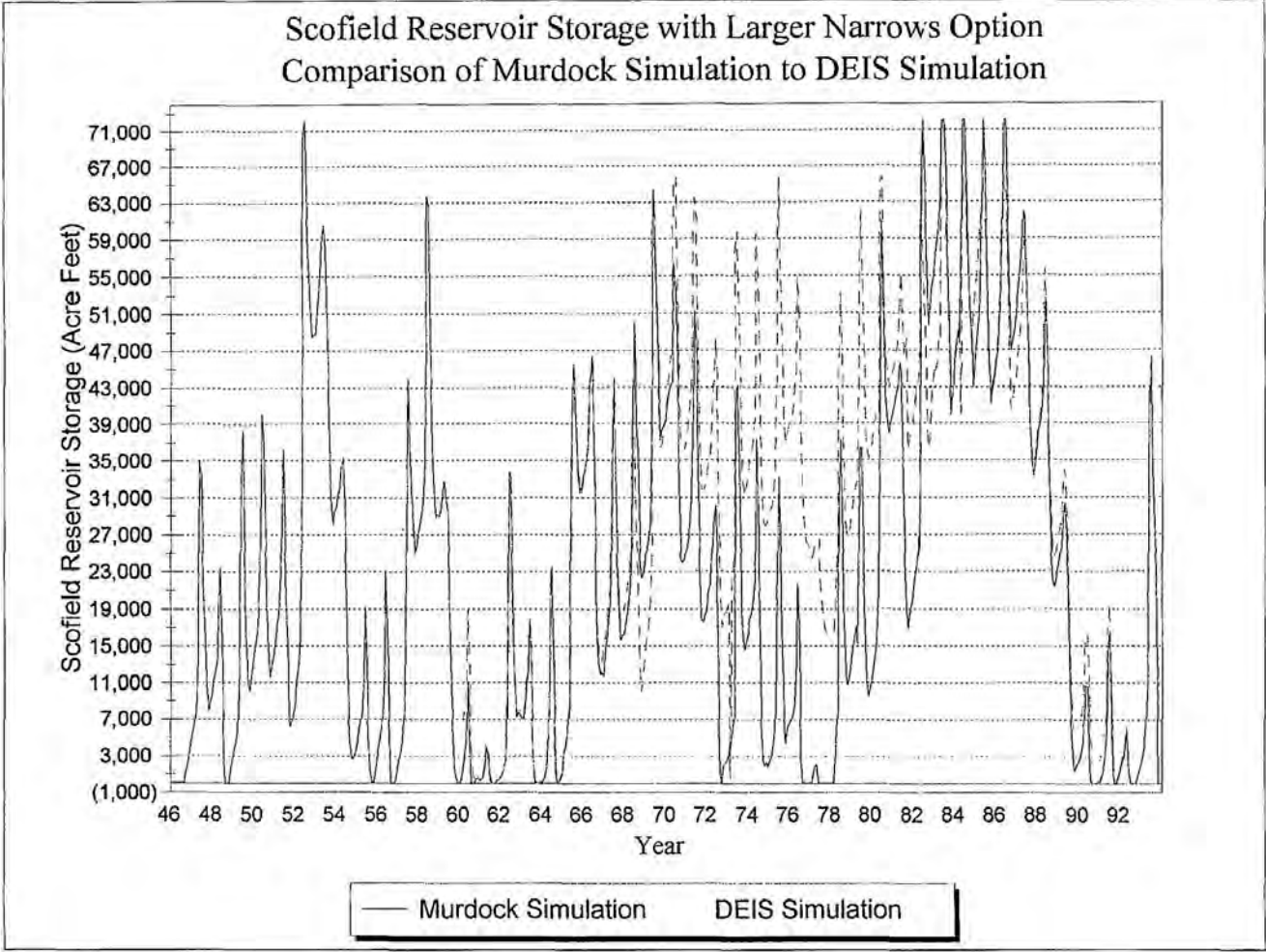
NARROWS RESERVOIR ACTIVE CAPACITY IS 10,000. AC.FT.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946	0.	0.	0.	0.	0.	0.	0.	0.	10,000.	9,928.	9,876.	9,804.
1947	9,703.	9,605.	9,540.	10,000.	10,000.	10,000.	8,398.	6,602.	5,651.	5,581.	5,538.	5,465.
1948	5,364.	5,263.	5,157.	5,432.	7,945.	8,533.	6,865.	4,861.	3,817.	3,656.	3,580.	3,500.
1949	3,412.	3,326.	3,266.	4,426.	8,877.	10,000.	8,423.	6,561.	5,567.	5,468.	5,382.	5,271.
1950	5,154.	5,041.	4,957.	5,506.	8,477.	9,601.	8,002.	6,136.	5,208.	5,102.	5,123.	5,049.
1951	4,946.	4,847.	4,772.	5,510.	8,686.	9,851.	8,285.	6,513.	5,547.	5,500.	5,462.	5,397.
1952	5,312.	5,232.	5,170.	5,768.	10,000.	10,000.	8,848.	7,237.	6,375.	6,322.	6,304.	6,231.
1953	6,133.	6,037.	5,966.	6,237.	8,457.	10,000.	8,493.	6,736.	5,804.	5,726.	5,705.	5,663.
1954	5,612.	5,574.	5,548.	6,410.	8,069.	8,390.	6,660.	4,730.	3,766.	3,672.	3,611.	3,517.
1955	3,416.	3,319.	3,245.	3,472.	5,918.	6,730.	5,074.	3,270.	2,238.	2,084.	1,974.	1,859.
1956	1,742.	1,628.	1,552.	2,377.	5,435.	6,100.	4,455.	2,471.	1,446.	1,296.	1,212.	1,101.
1957	990.	897.	838.	1,067.	3,567.	8,665.	7,448.	5,718.	4,792.	4,770.	4,772.	4,704.
1958	4,619.	4,542.	4,500.	4,958.	9,949.	10,000.	8,427.	6,625.	5,633.	5,514.	5,445.	5,357.
1959	5,264.	5,166.	5,079.	5,293.	7,045.	7,612.	5,930.	4,004.	2,999.	2,888.	2,802.	2,678.
1960	2,540.	2,411.	2,340.	2,633.	5,167.	5,845.	3,929.	1,952.	933.	831.	760.	677.
1961	566.	459.	360.	634.	1,776.	1,713.	0.	0.	0.	0.	0.	0.
1962	0.	0.	0.	879.	5,629.	7,595.	6,248.	4,528.	3,636.	3,559.	3,499.	3,393.
1963	3,256.	3,142.	3,029.	3,094.	6,080.	7,042.	5,436.	3,676.	2,641.	2,485.	2,399.	2,275.
1964	2,191.	2,111.	2,026.	2,148.	5,141.	6,912.	5,474.	3,724.	2,689.	2,533.	2,446.	2,398.
1965	2,354.	2,300.	2,232.	2,491.	5,468.	8,350.	7,065.	5,554.	4,896.	4,983.	5,024.	5,000.
1966	4,959.	4,924.	4,857.	6,035.	8,239.	8,569.	6,768.	4,953.	3,980.	3,953.	3,886.	3,810.
1967	3,709.	3,612.	3,527.	3,649.	6,667.	9,072.	7,610.	5,816.	4,878.	4,788.	4,729.	4,671.
1968	4,619.	4,570.	4,526.	4,707.	7,345.	10,000.	8,409.	6,663.	5,752.	5,714.	5,681.	5,610.
1969	5,523.	5,440.	5,382.	6,040.	10,000.	10,000.	8,492.	6,663.	5,745.	5,743.	5,748.	5,727.
1970	5,702.	5,653.	5,633.	5,808.	9,361.	10,000.	8,436.	6,554.	5,597.	5,544.	5,530.	5,563.
1971	5,624.	5,560.	5,514.	5,854.	8,593.	9,634.	7,979.	6,091.	5,130.	5,069.	5,037.	5,019.
1972	5,012.	4,994.	5,161.	5,872.	7,796.	8,213.	6,404.	4,452.	3,476.	3,413.	3,382.	3,324.
1973	3,256.	3,188.	3,146.	3,353.	7,213.	8,888.	7,316.	5,439.	4,497.	4,420.	4,375.	4,330.
1974	4,306.	4,256.	4,205.	4,417.	8,021.	8,614.	6,856.	4,913.	3,894.	3,785.	3,713.	3,618.
1975	3,533.	3,450.	3,366.	3,413.	5,088.	9,690.	8,508.	6,722.	5,772.	5,740.	5,729.	5,713.
1976	5,695.	5,669.	5,616.	5,834.	8,573.	9,028.	7,263.	5,256.	4,209.	4,047.	3,927.	3,803.
1977	3,679.	3,577.	3,478.	3,767.	3,748.	3,664.	1,774.	0.	0.	0.	0.	0.
1978	0.	0.	0.	496.	3,920.	7,669.	6,168.	4,403.	3,440.	3,242.	3,203.	3,113.
1979	3,022.	2,933.	2,842.	3,038.	6,348.	7,825.	6,157.	4,275.	3,284.	3,188.	3,117.	3,049.
1980	2,981.	2,917.	2,849.	3,299.	6,797.	10,000.	8,552.	6,708.	5,778.	5,717.	5,689.	5,633.
1981	5,571.	5,509.	5,496.	6,250.	8,136.	8,814.	7,046.	5,108.	4,118.	4,077.	4,035.	3,951.
1982	3,842.	3,736.	3,652.	4,217.	8,863.	10,000.	8,584.	6,781.	5,933.	6,152.	6,345.	6,431.
1983	6,478.	6,507.	6,588.	6,871.	9,230.	10,000.	9,574.	7,954.	7,153.	7,257.	7,358.	7,472.
1984	7,548.	7,604.	7,650.	7,947.	10,000.	10,000.	8,783.	7,057.	6,175.	6,249.	6,316.	6,382.
1985	6,436.	6,446.	6,459.	8,023.	10,000.	10,000.	8,479.	6,637.	5,690.	5,670.	5,696.	5,699.
1986	5,703.	5,723.	5,826.	6,781.	10,000.	10,000.	8,471.	6,642.	5,721.	5,735.	5,770.	5,732.
1987	5,629.	5,524.	5,439.	6,318.	7,933.	8,250.	6,499.	4,578.	3,586.	3,481.	3,405.	3,312.
1988	3,230.	3,152.	3,087.	3,516.	6,227.	6,709.	4,949.	3,040.	2,057.	1,968.	1,938.	1,888.
1989	1,834.	1,762.	1,750.	2,866.	4,439.	4,891.	3,071.	1,160.	209.	104.	153.	60.
1990	0.	0.	0.	852.	2,463.	2,950.	1,264.	0.	0.	0.	0.	0.
1991	0.	0.	0.	115.	2,957.	4,730.	3,136.	1,316.	304.	162.	127.	67.
1992	0.	0.	0.	717.	1,444.	1,385.	0.	0.	0.	0.	0.	0.
1993	0.	0.	5.	433.	5,697.	7,517.	5,946.	4,091.	3,124.	0.	0.	0.

TABLE 19

NARROWS RESERVOIR RELEASES TO COTTONWOOD CANYON - ACRE FEET										DATE 12-10-1994			TIME 17:38:14	
NARROWS RESERVOIR ACTIVE CAPACITY IS 10,000. AC.FT.														
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SHORTAGE
1946	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1947	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1948	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1949	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1950	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1951	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1952	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1953	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1954	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1955	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1956	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1957	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1958	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1959	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1960	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1961	124	113	124	0	0	0	1653	0	0	37	63	39	2,153.	3,247.
1962	39	79	90	0	0	0	1800	1900	971	124	120	124	5,247.	153.
1963	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1964	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1965	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1966	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1967	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1968	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1969	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1970	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1971	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1972	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1973	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1974	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1975	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1976	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1977	124	113	124	0	0	0	1800	1724	0	0	0	0	3,885.	1,515.
1978	0	0	43	0	0	0	1800	1900	971	124	120	124	5,082.	318.
1979	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1980	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1981	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1982	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1983	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1984	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1985	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1986	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1987	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1988	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1989	124	113	124	0	0	0	1800	1900	971	124	120	124	5,400.	0.
1990	89	28	47	0	0	0	1800	1223	0	0	2	36	3,224.	2,176.
1991	37	33	46	0	0	0	1800	1900	971	124	120	124	5,155.	245.
1992	98	15	99	0	0	0	1332	0	0	56	25	18	1,642.	3,758.
1993	40	53	124	0	0	0	1800	1900	971	124	120	124	5,257.	143.
GRAND TOTALS													247,646. 11,554.	

EXHIBIT "F"



51-53 **REVIEW OF THE NARROWS DRAFT EIS**

Exhibit H

-Wetland, Riparian and Related Resource Impacts-

PREPARED FOR

**The Carbon Water Committee
PO Box 509
Helper, Utah**

PREPARED BY

**Western Wetland Systems
1155 North 1000 East
Orem, Utah 84057**

May 1998

***NARROWS PROJECT-REVIEW OF WETLAND, RIPARIAN AND
RELATED RESOURCE IMPACTS***

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EXECUTIVE SUMMARY

The Narrows Project 1998 Draft EIS (the "DEIS") indicates that impacts to wetland and riparian resources are significant environmental issues that will be addressed in the DEIS and that losses in terms of both acres, and functions and values would be identified and mitigated. The DEIS also states that it will comply with all federal regulations including the Clean Water Act. This report reviews the existing wetland and riparian data to identify the adequacy of the impact assessment provided in the DEIS. The discussion below is divided into five main sections:

- Adequacy of the DEIS-Defined Project Area of Influence,
- Impact Assessment Adequacy-Acres,
- Impact Assessment Adequacy-Functions and Values,
- Adequacy of Proposed Compensatory Mitigation, and
- Clean Water Act Compliance.

Technical details supporting the summaries can be found in report Sections 2.0 to 6.0.

Adequacy of the DEIS-Defined Project Area of Influence

The DEIS indicated that the Narrows Project area of influence for wetland and riparian resources was restricted to the Narrows Basin where direct impacts would occur through fill and inundation. However, it appears that indirect impacts through changes in hydrology or land use extend beyond the restricted area used in the DEIS impact analysis. Clean Water Act guidelines state that all wetland impacts must be identified in an adequate impact analysis for a 404 permit. The guidelines require identification of all direct impacts (fill, inundation), a description of all wetlands and waters of the US subject to changes in hydrologic regulation and an identification of the downstream and secondary effects of dams on all waters of the US.

Based on data in the BOR files and the hydrologic and land use changes indicated in the DEIS, WWS identified the following wetlands, riparian habitats and other waters of the US either within the proposed Narrows Reservoir or immediately downstream of the proposed Narrows Dam:

- More than 100 acres of wetlands within the Narrows Basin that would be inundated.
- A minimum of 34 acres of riparian wetlands and waters of the US along Gooseberry and

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Cottonwood Creeks that would be affected by Narrows Project flow depletions of 51 to 91% or augmentation by more than 100%. An estimated 50 additional acres of wetlands along Middle Gooseberry Creek would be affected if the stream were to downcut or laterally erode.

- Extensive wetlands are associated with lower Gooseberry Reservoir, including 17-23 acres of aquatic bed/shallow marsh within the reservoir. Operation of the Narrows Project would reduce Gooseberry Creek inflows by 91% requiring changes in reservoir operation. Even if the area was determined to be a non-jurisdictional wetland, it is still a waters of the US and impacts to aquatic bed and vegetated shallow wetlands would be significant impacts.
- Scofield Reservoir is a waters of the US. Changes in operation as a result of the Narrows Project would convert 250 acres of a shallow littoral zone to a barren mudflat.
- There is no data in the DEIS on riparian community composition or width along 6 miles of Fish Creek. This is in spite of an estimated project 20% depletion in average annual flows with a 17 to 25 % depletion of flows during the critical spring period. There is no data in the DEIS on the upper Price River riparian community in spite of a 33 to 100 % depletion during the critical spring period.

In contrast to the above list, the DEIS states that only 100 acres of wetlands were in the project area of influence. This number ignored the riparian wetlands outside of the Narrows Basin. Adding these wetlands into the project area of influence means that there are at least another 100 acres of wetlands (for a total of 200 acres not including Fish Creek and the upper Price River) within and immediately downstream of the Narrows dam that have the potential to be affected by the project but which were not considered in the DEIS.

Secondary effects of the project clearly would continue downstream on the Price River and within the Project service area in the Sanpete Valley. More than 20 adult Colorado River squawfish have been found in the lower Price River. The Colorado River squawfish is an endangered species that is dependent upon spring flooding for long term survival. The proposed project would divert from 25 to 30% of the spring peaks in some years. The Sanpete Valley wetlands support the only population of the spotted frog in the Sevier GMU. The DEIS incorrectly excludes the Sanpete Valley wetlands from its area of influence. Consequently, the DEIS presents an impact analysis based on an incomplete definition of the Project area of influence.

Impact Assessment Adequacy-Acres

The complexity of riparian systems requires that multiple variables be considered in evaluating the potential impacts of a proposed project. Riparian impact assessments need to address changes in:

- Hydrologic support (magnitude, timing and duration of both spring peaks and summer base flows),

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- Riparian vegetation parameters (dominant species and communities, required hydrologic regimes, drought or inundation tolerances)
- Channel morphology responses as a result of changes in sediment regime or flows, and
- Relationships among flow changes, riparian vegetation responses and channel morphology.

None of these variables or their interactions were addressed in the impact assessment provided in the DEIS. Instead, the impact assessment was based on a *single* modeled average monthly water table value. Additionally, impacts were only considered for Middle Gooseberry and Cottonwood Creeks. Thus, the impact analysis in the DEIS is incomplete.

Middle Gooseberry and Cottonwood Creeks. Even if the DEIS impact assessment included consideration of the key variables, data in supporting documents does not support the DEIS statement of no impact. May through early June are important hydrologic periods for riparian species in terms of providing alluvial aquifer recharge and plant establishment. The Middle Gooseberry Creek analysis identified that the average May monthly water table would only drop 0.5 to 0.9 feet, and therefore it was insignificant and would cause no riparian impacts. Data in supporting documents identifies that water table decreases will actually range up to 1.4 feet and average close to a foot in May followed by water table reductions of 0.5 feet during the early summer.

All of the dominant riparian species along Middle Gooseberry Creek, as listed in the BOR file data, require a water table at or above the surface at least during the spring, with moisture retained in the rooting zone throughout the growing season. The proposed water table depletions would result in the loss of all of the dominant riparian species. These species would likely be replaced by species such as clover, dandelion, yarrow, thistles, musk thistle and sagebrush.

The DEIS contends that Middle Gooseberry Creek would naturally narrow as sediment is deposited and plant species expand into the new floodplain. However, the Project would be releasing "hungry water" (devoid of sediment and highly erosive as it attempts to adjust to a new sediment regime downstream of a dam) into an area in which the water table reductions would result in mortality of the dominant riparian wetland species. In contrast to statements in the DEIS that the stream would naturally adjust by narrowing, the loss of the herbaceous riparian vegetation and their associated high sediment stabilization abilities, would result in stream widening and/or down cutting. Stream down cutting would be particularly damaging along Middle Gooseberry Creek as it would then allow the stream to serve as a drain for the adjacent wetland complex resulting in impacts to more than 50 acres of wetlands.

The DEIS impact assessment for Cottonwood Creek was also limited and based upon an inaccurate definition of the dominant discharge. The dominant discharge is equivalent to the effective

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discharge, which by definition varies with changes in flow duration or sediment transport. Increased flow durations would result in sediment mobilization at a lower discharge than currently occurs. As such, the dominant discharge methodology in the DEIS is flawed and the potential for stream degradation requires re-examination. The effective discharge and the duration of the effective discharge must be identified to evaluate riparian and stream channel impacts to Cottonwood Creek. Even if the stream channel did not degrade, riparian vegetation would still be lost by inundation.

Other Headwater Streams and Basins. The impact assessment presented in the DEIS did not address the downstream effects of the Narrows Reservoir on: (1) the wetlands and waters of the US associated with Lower Gooseberry and Scofield Reservoirs; (2) lower Gooseberry Creek; (3) Fish Creek; and (4) the upper Price River. According to the DEIS, substantial changes in hydrologic support would occur at all of these sites, including depletion of critical spring flows from Fish Creek and the upper Price River by 25 to 100%, with May flows reduced to 0 in the upper Price River in some years.

There was also no assessment in the DEIS of the impacts of associated features on wetland resources. These activities include campground construction along the northwest margin of the proposed Narrows Reservoir, a projected increase of 46,400 recreation visitor days in the Gooseberry Creek area as a result of the project, relocation of State Road 264, temporary construction roads or rehabilitation of the Narrows Tunnel near Cottonwood Creek.

Valley Streams. The DEIS did not address impacts to the lower Price River in spite of acknowledging that the Project would cause depletions of 18 to 23% of the spring flow peaks. Spring peak flow depletions would substantially affect cottonwood and native willow recruitment potential, favor tamarisk expansion and adversely affect the potential for Colorado River squawfish regeneration.

Non-Riparian Wetlands-Sanpete Valley. An interagency Conservation Agreement to prevent the spotted frog from being listed as a threatened or endangered species was signed by the BOR in 1998. Within the Sevier River GMU, the spotted frog only occurs in five locations, all within the Narrows Project service area, and any loss would be considered significant. Currently, breeding frogs occur adjacent to the San Pitch River immediately below agricultural fields that would receive supplemental Project water. The DEIS states that changes in water quality would adversely affect the spotted frog, but did not discuss if the project would change water quality or what the impacts might be. Concentrations of boron and selenium, contaminants known to affect wildlife reproductive success, have been found in the project area at or near wildlife standards. Potential effects of these two contaminants on the spotted frog and the "surveys, studies, habitat enhancement, habitat acquisition and mitigation" identified in the Agreement need to be completed and discussed in the DEIS for it to be in compliance with the Agreement that the lead agency has signed.

The DEIS also did not address impacts of 16.8 miles of new pipeline and regulating pond construction (with 28 stream crossings) or the required diversion dam on Cottonwood Creek.

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Impact Assessment Adequacy-Functions and Values

The DEIS stated that wetland impact assessment would take into account wetland functions and values, but that “because the primary function of wetlands is wildlife habitat, the procedure known as HEP [a single species wildlife assessment model] was used to evaluate the wetland values.” The statement contrasts with the conclusions of the National Research Council in 1995 that the use of HEP is not appropriate for wetlands functional assessment. The DEIS selection of the HEP analysis also contrasts with previous Project studies which concluded that the riparian wetlands in the project area were most valuable for sediment stabilization, sediment retention, nutrient transformation, flood flow alteration, ground water discharge, production export to aquatic systems, aquatic life/diversity, general wildlife diversity and abundance, and wildlife breeding habitat.

In the DEIS, the only site for which even a HEP analysis was completed was the Narrows Basin. However, this analysis ignored descriptions of highly organic soils, a relatively high number of wetland plant species and high interspersed of habitats. These characteristics suggest that, in addition to the nine functions listed above, that the site provides two additional functions and values—preservation of biodiversity and uniqueness/heritage values.

No assessment was made in the DEIS of the functions and values provided by riparian wetlands along Gooseberry or Cottonwood Creeks. Sediment stabilization, nutrient transformation and food export/breeding habitat functions were identified in previous studies as highly valuable functions performed by the riparian wetlands along Gooseberry Creek. Changes in these functions need to be assessed. This is particularly important as the Project would result in the loss of the native riparian species currently of high value in sediment stabilization.

Adequacy of Proposed Compensatory Mitigation

The DEIS proposes two types of compensatory mitigation for wetland and riparian losses. The first type is to replace the wetlands inundated in the Narrows Basin (2 proposed locations) on a 1:1 basis through either creation of new wetlands in the Gooseberry Creek Basin, restoration of wetlands along Mud Creek or enhancement of existing wetlands in the Manti Meadows. The second type is identified in the DEIS as a measure to mitigate for adverse effects to fisheries in Middle Gooseberry Creek.

Only one of the four proposed mitigation sites for the Narrows Basin wetlands that would be inundated appears reasonable. The Manti Meadows site should be discarded as it would replace loss of a unique high elevation basin providing 11 distinct functions and values (none of which is waterfowl habitat), by low elevation waterfowl habitat. The two sites within the Gooseberry Creek Basin (next to the proposed Narrows Reservoir and the lower Gooseberry Reservoir) are dominated by sagebrush. Wetland creation on these sites would likely result in a water loss through seepage alone of 5,184 to 6,192 acre-feet per year for the Narrows Reservoir and lower Gooseberry Reservoir sites, respectively. This is more water than is available in the upper Gooseberry Creek Basin. Use

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of these sites for mitigation would also defeat the project purpose by requiring more water than the project proposed to deliver.

Based on existing data, Mud Creek appears to be physically suitable for wetland mitigation, but the ability of the proposed mitigation to replace all 11 lost functions and values of the Narrows Basin wetland is doubtful. The likelihood of mitigation success at Mud Creek according to the proposed plan of simply removing grazing is questionable as the soils indicate additional hydrologic support would be necessary. The mitigation costs presented in the DEIS also appear to be underestimated by 70 %.

The proposed use of instream structures in Middle Gooseberry Creek to raise the water table would not maintain riparian vegetation and would promote channel widening and/or degradation, thereby increasing the project impacts. Studies indicate that medium stage check dams (which would be required to raise the spring water table by up to 1.4 feet) are poorly suited to meandering streams such as Middle Gooseberry Creek and typically result in bank erosion. There is no evidence in the DEIS to support the proposed benefits of instream structures in Middle Gooseberry Creek. Conversely, results from recent studies evaluating the effectiveness of instream structures in Utah suggest that the mitigation would cause as much damage as the project itself.

No mitigation is proposed for any of the other potential impacts to wetlands, riparian habitats or other waters of the US.

Clean Water Act Compliance

The project as described in the DEIS segments the action and violates the Clean Water Act requirements for (1) consideration of only single and complete projects and (2) provision of sufficient data to address the significant degradation clause of the 404(b)(1) guidelines which, among other things, requires consideration of secondary effects and downstream effects of dams.

In the DEIS, wetlands were identified only in portions of the Narrows Basin. However, there are an estimated minimum 100 additional acres of wetlands, vegetated shallows and other waters of the US outside of the Narrows Basin subject to substantial (i.e., 30 to 100%) changes in hydrologic support. This violates the minimum delineation guidelines which require the entire area of influence for a proposed project to be identified and examined for wetlands.

The Narrows Basin wetland delineation is 10 years old and under current COE policy appears to have expired. Further, there is a discrepancy between the 140 acres of wetland mapped in 1988 and the 104 acres of wetlands identified in the DEIS. The rationale for exclusion of silver sage areas dominated by hydrophytic species and bisected by small drainages is also not clearly explained.

Section 404(b) of the Clean Water Act requires that individual permits comply with the 404(b)(1) guidelines developed by the EPA (40 CFR 230.1-230.80). These guidelines require:

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- Determination of direct effects on all special aquatic sites including wetlands, vegetated shallows and riffle and pool complexes,
- Description of downstream flows and effects on special aquatic sites where there are changes in hydrologic regulation,
- Determination of the downstream and other secondary effects of dams on all waters of the US,
- Identification of the cumulative project effects of both direct (fill, inundation) and indirect (changes in water quantity and quality) impacts,
- Provision of mitigation plans in sufficient detail to ensure that the mitigation is capable of being implemented, will be effective in meeting goals once implemented and is not based upon unproven methods or methods with variable success, and
- That a permit be issued only in the absence of practicable alternatives that would have a lesser impact and that the project can not be defined so narrowly so as to eliminate other alternatives.

The DEIS fails to address the first four items by ignoring potential impacts to more than 100 acres of wetlands, vegetated shallows and other waters of the US downstream of the proposed Narrows Dam that would be subject to dramatic changes in hydrologic support. The DEIS also fails to address secondary effects associated with the project in the Sanpete Valley that could adversely affect the spotted frog, and potential impacts to both riparian vegetation and the endangered Colorado River squawfish in the lower Price River.

The mitigation plans in the DEIS are insufficient to assess mitigation success. When site details are reviewed, it appears that only one of the five proposed mitigation sites has any chance of increasing or enhancing wetland acreage. Of the 4 mitigation sites proposed for the Narrows Basin, only one (Mud Creek) contains both suitable soils for wetlands and the ability to provide in-basin mitigation. The ability of the Mud Creek site to compensate for all 11 functions and values of the Narrows Basin is questionable. The Middle Gooseberry Creek mitigation proposes a technique that is not suited to a meandering stream and that would likely result in stream degradation not mitigation.

The DEIS also improperly uses mitigation to justify the preferred alternative. It does this by not disclosing the huge impacts associated with flow depletions downstream of the proposed Narrows Dam. Instead it pretends that it will mitigate the impacts away. In fact, the DEIS rejects three practicable alternatives to the Project because of environmental impacts that appear to be greater than the mitigated preferred alternative. For example the Direct Diversion alternative was dismissed because it would impact 60 acres of wetlands and degrade Cottonwood Canyon for a net total of 60-

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80 acres of wetlands as compared to the mitigated preferred alternative of 100 acres of wetlands. However, the unmitigated preferred alternative has more than 200 acres of impacts and will also likely also degrade Cottonwood Canyon. Practicable alternatives with less than this amount of impact cannot be dismissed without violating the 404(b)(1) guidelines and mitigation can not be used to "buy down" the impacts of an alternative so that it will seem to have less impact than others.

Conclusions

The overall goal of this report is to identify if the DEIS conclusion of "no net effect" on wetlands and riparian resources is supportable. Review of existing data found that there was no support for a conclusion of "no net effect", that the area of influence was defined to exclude wetland and riparian resources subject to substantial changes in hydrologic support, that substantial degradation of wetland and riparian resources as a result of the project was likely, that the proposed compensatory mitigation was likely to have limited or no success in replacing lost acres, functions and values, and that mitigation was used inappropriately to justify the preferred alternative.

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1.0 INTRODUCTION

The draft environmental impact statement (the "DEIS") for the Narrows Project indicates that the Project's purpose is to develop a supplemental water supply for the Sanpete Valley in northern Sanpete County by diverting water from the Price River drainage to Cottonwood Creek in the San Pitch/Sevier River drainage. To accomplish this, a new dam and reservoir on Gooseberry Creek (Narrows Reservoir) would be constructed. Ancillary features of the Project include rehabilitation of the Narrows Tunnel, construction of 16.8 miles of new water distribution pipelines, relocation of 2.6 miles of state roads, construction of access roads, addition of recreation facilities and supply of supplemental irrigation water to 15,420 acres of farmland. The project would reduce total annual flows by 51 to 91 % in Gooseberry Creek. The project would also reduce critical spring flows by 17 to 25% in Fish Creek and by 70 to 100% in the upper Price River. Conversely the project would augment flows by 100% in Cottonwood Creek and increase salinity in the San Pitch River. Although not identified as project features, inflows to the existing lower Gooseberry Reservoir from Gooseberry Creek would be changed by 91% and Scofield Reservoir operation would change in relation to the Narrows Reservoir operation.

A final environmental impact statement (FEIS) for the Narrows Project was prepared in 1995, but was rescinded. A revised DEIS was released on March 13, 1998 (Federal Register, Vol 63, no. 49, p. 12502-12503). Significant environmental issues identified in the 1998 DEIS, Section 1.6 included effects on wetland-dependent threatened and endangered species, wetland resources, and aquatic and riparian resources. The purpose of this report is to evaluate the wetland, riparian and related wildlife resource impact assessments completed by the Bureau of Reclamation (BOR) and presented in the newly released 1998 DEIS to determine if they adequately address all of the Project wetland and riparian-related issues. This report analyzes the wetland and riparian impacts associated with the Narrows Project, identifies potentially related effects on listed and sensitive wildlife species, and evaluates the previous wetland assessment for compliance with current Clean Water Act guidelines. Compliance with Clean Water Act guidelines is particularly important as the DEIS identified on page 2-1, that one of the five Project alternative selection criteria was that "the project must comply with all statutory and regulatory requirements including Section 404 of the Clean Water Act". The report also discusses whether or not the existing data supports the conclusion of no net wetland or riparian impacts and identifies areas where more information is needed to properly evaluate impacts.

2.0 METHODS

This report is based upon review and analysis of existing file data, aerial photography and the newly released 1998 DEIS. No new data was collected and no field site visits were made. The following data were obtained from the BOR and its contractors in the preparation of this report:

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- Aerial photographs (2) from upper Gooseberry Creek to lower Gooseberry Reservoir taken on July 31, 1985 (infrared, non-stereo, final enlarged scale 1:7920)
- Vegetation overlays for the Narrows Basin prepared by a private contractor in 1988 and by Mt. Nebo in 1992
- HEC analysis data, including cross section profiles, cross section locations and data printouts (Franson and Noble 1991b)
- Stage-discharge relations developed for the IFIM study (Hardy, Addley and Associates 1993 and 1997)
- Landslide stability analysis results (Franson and Noble 1991a)
- HEP analysis summary provided in Mt. Nebo (1992)
- Mitigation details provided in the Section 404 wetland permit submitted to the COE on March 13, 1998 by Franson and Noble
- Spotted frog survey results and conservation concerns in the Sanpete Valley (Hovingh 1991)
- 1989 memo from Snyder to Hutchinson regarding the status of wetland resource assessment for the Narrows Project

For this review, the hydrologic data provided in the 1998 DEIS and/or BOR files was used to assess riparian and wetland impacts. However, selected review of daily USGS gage data was necessary to assess changes in flow timing and the adequacy of the hydrologic data used in the DEIS for its wetland and riparian impact assessment.

The following questions regarding riparian and wetland impacts provided the focus for the existing data review. The report section discussing these questions is identified in parentheses following the italicized subheaders separating the questions. The report is organized so that a summary of baseline conditions within the entire direct and indirect Project area of influence is provided first in section 3.0. This summary was compiled by Western Wetland Systems (WWS) based solely on the information provided in the sources listed above. Subsequent sections (sections 4.0-6.0) evaluate the adequacy of the existing data in evaluating project impacts and the degree to which the analysis presented in the DEIS was supported by the baseline data in the BOR files.

Baseline Conditions (Section 3.0)

- What areas would be subject to direct Project impacts? What areas would be subject to indirect impacts through changes in land use or hydrologic support? What wetlands, riparian habitats and waters of the US occur within both the direct and indirect project area of influence?
- What types of riparian vegetation occur along Cottonwood and Gooseberry Creeks?
- Is there any data available for other wetlands potentially affected by changes in land use or hydrologic support in the Gooseberry Creek Basin, along the Price River or wetlands in the Sanpete Valley service area?

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- What physical data (soils, stream morphology, water quality) is available to help characterize the nature of Project impacts?

Adequacy of Wetland and Riparian Analyses (Section 4.0)

- What are the salient points of the modeled hydrographs that pertain to riparian vegetation?
- How would the types of riparian vegetation that occur along Gooseberry and Cottonwood Creeks respond to proposed changes in spring peaks and summer baseflows? How similar would effects be to those observed on other nearby streams (e.g., Sixth Water, Diamond Fork, Duchesne River) for which the proposed operation would be similar and for which data exists on project effects?
- Is there existing channel and floodplain data (from the IFIM and HEC studies) that can be used to more accurately characterize the likely channel and riparian responses to flow changes?
- Have all sites and features been reviewed both for the presence of wetlands and potential direct (i.e., fill) and indirect (i.e., hydrologic, land use changes or water quality) impacts?
- Should analyses for other wetlands, riparian habitats and waters of the US in the Gooseberry Creek Basin, along the Price River or in Sanpete Valley be included in the DEIS?
- Are there links between sensitive fish and wildlife species and wetland/riparian impacts that may have been missed in the DEIS?

Adequacy of Wetland and Riparian Mitigation (Section 5.0)

- How were mitigation sites selected? Is there any data on their physical site characteristics that suggests the mitigation would be successful?

Clean Water Act, Section 404 Compliance (Section 6.0)

- Does the wetland analysis presented in the DEIS meet current Section 404 wetland permit guidelines?

Conclusions (Executive Summary)

- Does the existing data support the DEIS general conclusion of no net effect?

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3.0 BASELINE CONDITIONS

3.1 Narrows Project Area of Influence

The DEIS indicated that the Narrows Project area of influence for wetland and riparian resources was restricted to the Narrows Basin where direct impacts would occur through fill and inundation. However, it appears that indirect impacts through changes in hydrology or land use extend beyond the restricted area used in the DEIS impact analysis. Table 1 provides a summary of wetland and riparian areas, as identified by WWS based on the BOR file data, within the entire area either potentially directly or indirectly affected by Project construction and operation. In contrast to the statement in the DEIS on p. 3-56 that the "Narrows Basin was identified as the area that would be most significantly impacted by the proposed project", WWS included all wetland and riparian habitats in the project area of influence that could be affected by changes in quality or quantity of hydrologic support. No distinction was made by WWS in defining the area of influence as to the nature or magnitude of the impacts. WWS used the revised definition of the area of influence because Clean Water Act guidelines state that all wetland impacts must be identified in an adequate impact analysis for a 404 permit. The guidelines require identification of all direct impacts (fill, inundation), a description of all wetlands and waters of the US subject to changes in hydrologic regulation and an identification of the downstream and secondary effects of dams on all waters of the US (see also section 6.3).

Wetland and riparian resources potentially affected by the Project occur in two different major watersheds (Price River watershed and the San Pitch/Sevier River watershed) and a variety of hydro-geomorphic settings including: high elevation, steep gradient headwater streams; high elevation low-gradient headwater streams; high elevation basins and small ponds; low elevation valley rivers; and low elevation seeps and springs. For the purposes of this analysis, wetlands and riparian habitats are discussed below in three main groups separated according to similarities in elevation, the overall nature of the hydrologic support and the type of Project impacts. The three main groups are:

- **High elevation (mostly > 6,000' in elevation), headwater streams (first through third order) and their associated basins.** This includes Upper, Middle and Lower Gooseberry Creek, Fish Creek, and the upper Price River in the Price River drainage, and Cottonwood Creek in the San Pitch/Sevier River drainage. Large basins in this area include the Narrows Basin, lower Gooseberry Reservoir Basin, and the Scofield Reservoir area. Table 3-2 in the DEIS indicates that the Project would change the hydrology in these headwater streams by 25 to 100%.

Within this broad group, there are large differences in stream pattern, gradient, bed and bank material and specific hydrologic regimes that affect current functions and values and which would influence individual system responses to changes in hydrology.

- **Mid to Low elevation (<6,000' in elevation), valley streams.** This includes the Price River

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below Helper and the San Pitch River. Table 3-2 in the DEIS indicates that the Project would deplete critical spring flows on the lower Price River by 18 to 23% in May and June. The DEIS identified no flow changes for the San Pitch River but indicated that water quality could worsen.

- **Non-riparian wetlands in the Sanpete Valley.** The DEIS on p. 3-3 indicates that the Project would increase spring discharge in this area and potentially adversely affect water quality. This area also contains numerous intermittent streams that would be crossed by new pipeline construction.

3.2 Headwater Streams and Basins

3.2.1 Wetland and Riparian Vegetation

Descriptions of wetland and riparian vegetation associated with the four headwater streams in the Project area are sparse to non-existent in the DEIS and supporting documents. Typically, riparian and wetland descriptions are limited to one or a few sentences scattered among Mt Nebo (1992), Snyder (1989), the 1994 FWCA Report and the Fishery and Visual Resources sections of the 1998 DEIS. The most extensive wetland description can be found in Mt. Nebo (1992) in which a diverse group of wetlands within the Narrows Basin are described in less than a single page, indicating a dramatic lack of assessment of this important resource.

Based on WWS' review of the BOR file data and aerial photographs, it appears that there is sufficient information to provide a more complete description of baseline conditions. An accurate baseline description is extremely important as this provides the basis for the subsequent impact analysis. Without knowing the current riparian and wetland conditions, it is impossible to accurately state how the Project would impact these resources.

Gooseberry and Cottonwood Creeks

The above sources describe the riparian vegetation along Cottonwood and Gooseberry Creeks as consisting of narrow bands of vegetation (3-6' in width). The dominant riparian community along Gooseberry Creek is identified as sedge meadow that includes four species of sedges (*Carex* spp.), one rush (wiregrass, *Juncus arcticus*) and a grass (tufted hairgrass, *Deschampsia caespitosa*) (see Table 2). The only place the vegetation along Cottonwood Creek is mentioned is in the 1994 FWCA Report and this is limited to a single sentence identifying willows in the riparian area. No acreage is provided in the DEIS for the wetland communities along Cottonwood and Gooseberry Creeks and the source of the three to six feet of width is unclear. These communities were not mapped and appear not to have been examined in any way by a riparian wetlands specialist.

To provide a gross estimate of the extent of riparian wetlands along these creeks, WWS used several existing sources of information to identify the width of riparian wetlands. The acres of riparian

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wetlands within the Project area of influence were then identified by multiplying the stream length by the best available data on actual riparian and stream channel width. The stream channel acreage was included as these areas are also regulated under Section 404 of the Clean Water Act as "waters of the United States."¹ The ensuing acreage figure was used in lieu of any other data on riparian wetlands to identify the wetlands within the impact area of influence, but can only be considered a preliminary estimate. As section 6.0 describes, the Clean Water Act, Section 404 guidelines mandate that all wetlands within the Project area be identified and that consideration of impacts prior to alternative selection can not be negated by mitigation, particularly mitigation relying on future analyses or unproven methods. Therefore, for this review it was necessary to identify, even if only in a preliminary manner, the potential wetland acres that could be affected.

The BOR files contained aerial photographs only for Upper and Middle Gooseberry Creeks and cross sections were surveyed only on Middle Gooseberry Creek. Because wetlands had previously been mapped only in the Narrows Basin, WWS prepared a preliminary map of wetlands along Middle Gooseberry Creek. The preliminary WWS map shows an extensive series of wetlands along Middle Gooseberry Creek, with numerous small ponds, and oxbows. Wetland width along Middle Gooseberry Creek varies from 100 to more than 2000 feet with a total area exceeding 50 acres. Some wetlands appeared to be supported by hillside drainages and seeps. The large scale and lack of stereo aerial photographs in the BOR files limited the ability to separate the likely extent of hillslope seepage vs. stream support of wetlands. For this reason, WWS mapped an interpolated 2-year floodplain on a subset of 10 HEC cross sections and developed an average riparian wetland width from this data. The 2-year floodplain was used as the 1987 COE manual defines wetlands within riparian zones as those areas that are flooded, on average, once every two years. The 2-year floodplain required interpolation as the stage-discharge data developed for the HEC analysis did not include this flow. Thus, two wetland acreages were developed for Middle Gooseberry Creek--a total wetland acreage that includes some areas supported by hillslope seepage and an estimate of the jurisdictional wetland acres directly supported by streamflow. Both estimates will require refinement to accurately characterize impacts and mitigation needs.

Only a small portion of lower Gooseberry Creek immediately below lower Gooseberry Reservoir was visible in the 1985 BOR file aerial photographs on the Project and there were no photographs for any of the other riparian areas. In lieu of adequate data, the general three to six foot width listed in the DEIS as characterizing riparian areas was used to estimate the wetland extent along lower Gooseberry and Cottonwood Creeks. As such, this is likely an underestimate of the wetland acreage and will need to be refined.

Based on this preliminary estimate, there are a minimum of 34 acres of riparian wetlands and waters

¹ The Army Corps of Engineers has jurisdiction over all waters of the United States, which includes wetlands, and "other waters" such as rivers, intermittent streams, mudflats and sandflats. Thus, wetlands, which by definition are vegetated, are a subset of the "waters of the US".

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of the US along Middle and Lower Gooseberry and Cottonwood Creeks that would be directly affected by changes in streamflow. There is an estimated 50 additional acres of wetlands along Middle Gooseberry Creek that would be affected if the stream were to downcut or laterally erode, thereby acting as a "drain" for the adjacent wetland complex.

Gooseberry Creek Basin Areas

The DEIS describes three main communities in the Narrows Basin: Vasey Sagebrush (342.8 acres), Silver Sagebrush (160.8 acres) and Wetlands (104.3 acres). Three types of wetlands are identified: wet meadows, sedge meadows and willow thickets. Wet meadows occur in topographic depressions and seeps. Dominant species include the same four sedges listed above, wiregrass and tufted hairgrass. Sedge meadows occur along Gooseberry Creek and its tributaries. These communities are noted as being similar in structure and composition to the wet meadows and the distinction made by Mt. Nebo (1992) between wet and sedge meadows is unclear. The DEIS lumps the two communities together to calculate a total Narrows Basin wet and sedge meadow acreage of 65.7 acres. Average per cent cover of herbaceous species in wet and sedge meadows is 92% indicating dense vegetation. Average vegetation height is 8 inches, but ranges up to 12 inches (date of measurements unknown).

The third wetland plant community in the Narrows Basin is the willow thicket (38.6 acres). These primarily occur in scattered areas along the upper reaches of the Narrows Basin. Three willow species dominate this community type: Booth willow (*Salix boothii*), Drummond willow (*Salix drummondiana*) and Wolf willow (*Salix wolfii*). Mean cover shrub within the willow thickets is 72% with 39% herbaceous or ground cover (Mt Nebo 1992). Individual thickets can cover several acres and often contain small standing water areas (<1 acre) formed by beavers. This results in a high interspersed of small ponded areas surrounded by willows.

The total wetland acreage identified by Mt. Nebo (1992) differs from the original 1988 wetland study (results provided in Snyder 1989). In this study, a total of 140 acres of wetlands were identified in the Narrows Basin of which 51.8 acres were willow thickets, 29.4 acres riparian sedge meadows and 58.8 acres wet meadows. The original study provided no details of species composition or topographic position. There is no information on file explaining why the two estimates of wetland acreage differ.

Lower Gooseberry and Scofield Reservoirs

The DEIS provides no information about wetlands associated with these sites. The fishery and visual resources sections of the DEIS suggested that 250 acres of shallow water areas in Scofield Reservoir would be converted to barren mudflats and it is likely that there would be a loss of vegetated wetlands associated with the conversion.

Extensive wetlands are visible in the 1985 aerial photographs of lower Gooseberry Reservoir, but the DEIS did not quantify the extent of the surrounding wetlands. The DEIS indicates that 30 to 40% of the reservoir consists of shallow water less than three feet in depth with dense vegetation and

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Table 1. Summary of Wetlands, Riparian Habitats and other Waters of the US Within the Narrows Project Area of Influence.							
Area	Proposed Project Feature	Area of Influence	Wetland/Riparian in Area of Influence (acres)		Impacts listed in DEIS		Comments
			Total	By Type	Direct (Fill)	Indirect	
HIGH ELEVATION, HEADWATER STREAMS AND BASINS (>6,000' elevation)							
Price River Basin							
Upper Gooseberry Creek and Basin	Narrows Reservoir and Dam	627 acres ± 5.3 miles stream	104.3 (Mt. Nebo 1992) 140 (Snyder 1989)	65.7 sedge and wet meadow 38.6 dense willow scrub	100 acres inundated or filled	See below	Total wetland acreage may be underestimated Delineation > 10 yrs old and does not comply with guidelines
	Narrows campground	Unknown	Not identified in DEIS and no data on file to estimate impacts		Unknown	Increased recreation use not addressed	Associated features that need to be added to DEIS
	State Rd. 264 Relocation and construction access roads	Unknown	Not identified in DEIS and no data on file to estimate impacts		Unknown; wetlands within most likely route	Not addressed	

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Middle Gooseberry Creek	91% of average annual flow diverted	3 miles of stream and bordering riparian	Not identified in DEIS; estimated based on BOR file data as a minimum of 15.7 acres within the 2-yr floodplain and > 50 acres overall	Unspecified channel alteration	Identified as insignificant in DEIS	Potentially significant impacts ignored in DEIS. Clean Water Act mandates consideration of downstream effects of dams and this was not done.
Lower Gooseberry Reservoir	Not part of project, but Gooseberry Crk inflows to be reduced by 91%	57 acres shallow reservoir; unknown area of bordering wetlands	Not identified in DEIS; estimated based on BOR file data as 17-23 acres shallow water and aquatic wetlands with an unknown amount of bordering wetlands	None	Not addressed in DEIS	
Lower Gooseberry Creek	Diversion of 51% of average annual flow	3 miles of stream and bordering riparian	Not identified in DEIS; estimated based on BOR file data as a minimum of 14.7 acres	None	Identified as insignificant in DEIS	
Fish Creek	Diversion of 20% of average annual flow and up to 25% of spring peaks	3 miles of stream and bordering riparian	Not identified in DEIS; estimated based on BOR file data as a minimum of 8.1 acres	None	Not addressed in DEIS	
Scofield Reservoir	Reservoir reoperation to increase annual drawdowns an average of 9'	Unknown	250 acres shallow water littoral zone (a waters of the US) to be converted to barren mudflat	None	Not addressed in DEIS	
Upper Price River	Diversion of 64-100% of May flow and 30% of June flow	Unknown	No information	None	Not addressed in DEIS	

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San Pitch/Sevier River Drainage							
Cottonwood Creek	100% flow augmentation	4.9 miles of stream and bordering riparian	Not identified in DEIS; estimated based on BOR file data as a minimum of 3.6 acres		Diversion dam	Identified as insignificant in DEIS	Analysis presented in DEIS is flawed.
	Narrows Tunnel Rehabilitation	Unknown	Not identified in DEIS		Unknown	Disposal of spoils not addressed	Associated feature that must be addressed
MID TO LOW ELEVATION, VALLEY RIPARIAN WETLANDS							
Price River	Diversion of 25-30% of spring peaks in some years	Unknown	No information		None	Not addressed in DEIS	Potentially significant effects on listed Colorado River squawfish. Potential to increase tamarisk and reduce native riparian species
San Pitch River	Flow changes unspecified; salinity to increase	Unknown	No information		None	Not addressed in DEIS	
NON RIPARIAN WETLANDS-SAN PITCH/SEVIER RIVER DRAINAGE							
San Pitch Valley Service Area	Pipeline, diversion dam and regulating pond construction	16.8 miles with a 30' right-of-way	Not identified in DEIS; no BOR file data to estimate minimum # of acres		Minimum of 28 stream crossings	Unknown effects on existing streams	Associated feature that must be addressed in DEIS
	Supplemental water supply	15,420 acre service area	DEIS identified no wetlands to be converted	NA	None	Potential water quality effects identified as insignificant	Selenium and boron values at wildlife thresholds have already been measured in the service area Contains only known spotted frog population in Sevier GMU

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algal growths. Aquatic beds were clearly visible in the 1985 aerial photograph of the reservoir. It appears that from 17-23 acres of aquatic bed/shallow marsh occurs within the reservoir. The degree to which the aquatic bed and bordering wetlands would be considered jurisdictional is unknown, but the reservoir appears to have been placed in a historic wetland basin and at least a portion of the area is likely jurisdictional wetland. Even if the area was determined to be a non-jurisdictional wetland, the site is still a waters of the US.

Fish Creek and the Upper Price River

There is no data either in the DEIS or in the BOR files on riparian community composition or width along Fish Creek. This is surprising as Table 3-2 in the DEIS indicates a 20% depletion in average annual flows with a 17 to 25 % depletion of flows during the critical spring period. There is no data in the DEIS or in the BOR files on the upper Price River riparian community even though Table 3-2 in the DEIS indicates a 33 to 100 % flow depletion during the critical spring period.

Total Wetlands in the Headwaters Streams Area of Influence

The DEIS identified only 100 acres of wetlands within what it defined as the Project area of influence. This number ignored the riparian wetlands outside of the Narrows Basin. Adding these wetlands into the Project area of influence results in at least another 100 acres of wetlands in the headwater areas above 6,000 feet in elevation (for a total of more than 200 acres) that have the potential to be affected by the Project but which were not considered in the DEIS. Thus, the DEIS presents an impact analysis based on an incomplete definition of the Project area of influence.

3.2.2 Geomorphology and Soils

Geomorphic and soils data is critical for evaluating both potential channel responses to flow changes and the likely success of mitigation measures. The geomorphic and soils data provided in the DEIS and/or supporting files is extremely limited. The best descriptions for sites in the Gooseberry Creek Basin can be found in the fishery section of the DEIS where channels widths of 11 feet and 4 feet are described for Upper Gooseberry Creek and its tributaries, respectively. There is no standard channel morphology information in the DEIS (e.g., bankfull width and depth, width and depth at various flood flows, degree of entrenchment/confinement, slope, sinuosity, bed composition or particle size, bank height and composition) on Middle Gooseberry Creek, Lower Gooseberry Creek, Fish Creek or the upper Price River. Much of this information should have been gathered as part of the HEC-analysis and presented in the DEIS. In particular, local slope, particle size, bed and bank roughness are all critical to proper input of the HEC model variables. The HEC analysis input uniform roughness values suggesting that local data was not collected.

The channel form for Middle Gooseberry Creek observed on the BOR's 1985 file aerial photographs is meandering. The channel has a relatively wide floodplain and moderate to high sinuosity typical of a Rosgen type "C" channel. Photographs taken by the BOR contractor during cross section surveying in 1991 depict mostly stable stream banks covered by dense herbaceous vegetation. Some stream bank degradation (sloughing, cut banks) is depicted in lower portions of Middle Gooseberry

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Creek. Overall, the Middle Gooseberry Creek banks appear well vegetated, stable, and comprised of fine-textured sediments.

The only channel bed description in the entire Gooseberry Creek drainage can be found on page 3-89 of the DEIS where it is stated that "there are limited deposits of recent alluvial sand and gravel" within the active channel of Gooseberry Creek and its tributaries. The dominant material contributing to the channel bed and banks is unknown, but the Narrows Basin soils description suggests fine-textured materials in the banks. Scattered photographs taken by the BOR contractor during cross section surveying depict a few sites with large cobble along the banks but most photographs show fine-textured material overlaying cobbles. Bed composition is unknown, but is critical to evaluating the potential success of instream structures (see further discussion in section 5.2).

Soils in upper Gooseberry Creek within the Narrows Basin are variously described in the DEIS as generally consisting of "silty sand with some fine to coarse gravel" (p. 3-89), as "a mixture of clay, silt and sand with minor amounts of organic deposits" (p. 3-89) or as mollisols, "dark-colored, rich in bases" and within either cryoboroll or cryoaquoll great group (p. 3-93). Mollisols are one of 11 major soil groups (referred to as soil orders according in soil taxonomy). Mollisols are defined as having thick (10" or more) surface layers rich in organic matter which develop under grasslands or areas dominated by grasses and grass-like plants. Cryoaquolls are "histic" meaning that they contain a high amount of organic matter. The NRCS Soil Survey for Carbon County does not include the Narrows Basin and there is no citation for the soils descriptions or documentation in the BOR files as to how the soils were classified. If accurate as described, it means that much of the wetland area in the Narrows Basin is underlain by organic soils which increase the wetland's potential to provide nutrient transformation, biodiversity and uniqueness/heritage functions (see further discussion in section 4.2).

Cottonwood Creek is described in the DEIS as well-confined, moderately to deeply entrenched with relatively steep side slopes (slopes of 2:1 to 2.5:1). Channel slopes range from 0.03 to 0.07. The channel bed is characterized as being relatively well-armored by cobbles and boulders, with a median, or d50 particle size, of 6 to 8 inches. This information is critical for identifying at what flow particles will begin to move and how increased flow durations in Cottonwood Creek would affect sediment transport and channel erosion. However, the DEIS did not use this information in the Cottonwood Creek impact analysis.

3.3 Valley Streams

The DEIS contains no data on riparian wetlands along the Price or San Pitch Rivers even though the Project would have continuing downstream project effects. Downstream effects of spring flow depletions on the Price River are particularly important as more than 20 adult Colorado River squawfish, with at least one ripe female, have been found in the lower Price River. The Colorado River squawfish is an endangered species that is dependent upon spring flooding for long term

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survival (FWS 1992).

3.4 Non-Riparian Wetlands in Sanpete Valley

The Project description on page S-1 of the DEIS specifies that the Project consists of “construction of features and facilities to develop a supplemental water supply” on 15,420 acres of land that is currently used to produce alfalfa and grass hay. Although the Project would prohibit wetland conversion, the quality of water supporting the existing wetlands could change. The only description of wetlands within the Project service area can be found in Hovingh (1991). Here, the Project area is described as containing numerous alluvial fan springs. Wetland complexes at the springs were described as consisting of “numerous springs, slow moving water, some high shrubs... and associated wetlands.” Hovingh (1991) identified two potential water sources for the springs--high elevation recharge and irrigation return flows--but there is no data on which of the two sources of water support the wetlands.

Understanding the nature of water support and how it might change under project operation is extremely important. The areas outlined to receive project water contain the only known spotted frog population in the Sevier River Geographic Management Unit (GMU). The population was recently found to be genetically distinct from other populations in Utah (Hovingh, pers. comm.). The 1998 spotted frog Conservation Agreement identified the population as being critical to the preservation of the species in the Sevier River GMU. The population consists of 25 egg masses in five different locations, suggesting five females each producing five egg masses (Hovingh, pers. comm). This population size is well under the population goal of 1000 individuals (requiring at least 100 breeding females) identified in the 1998 Spotted Frog Conservation Agreement.

4.0 ADEQUACY OF WETLAND AND RIPARIAN IMPACT ANALYSES

4.1 Project Impacts-Acres

4.1.1 Introduction

The DEIS stated that it would assess wetland and riparian impacts in terms of both acres of wetlands lost and the functions and values of those wetlands. Page 3-59 stated that impacts would be considered significant if project implementation would “result in **any** loss of wetland acreage (extent) or function” and that “loss of acreage and function [would be considered] **prior** to implementation of mitigation measures” [emphases added]. The discussion below evaluates the adequacy of the DEIS impact assessment in terms of acres (this section). The adequacy of the functions and values assessment is provided in section 4.2. Evaluation of the role of mitigation and whether or not it is properly sequenced can be found in section 5.0.

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4.1.2 Factors Affecting Riparian Vegetation

Hydrologic Factors and Riparian Responses

The magnitude, timing and duration of flows are key factors controlling riparian vegetation establishment and maintenance (Padgett et al. 1989, Stromberg et al. 1991, Scott et al. 1993, Patton and McKee 1995). Spring peak flows are necessary for alluvial aquifer recharge. They are also necessary for continued establishment of a number of riparian species by creating areas where seeds can germinate. The timing of spring peaks is especially critical for those species for which seeds, such as willows and cottonwoods, are only viable for a couple of weeks following dispersal (Scott et al. 1993). A spring flood that occurs either before or after the dispersal period will not result in recruitment that year. Failure to recruit new individuals is a factor in long term riparian decline for most willow shrub, cottonwood forest and other communities dependent upon seedling establishment for long term persistence.

The duration and recession rate of spring floods are also critical to riparian species establishment. Peak flows need to slowly recede, to ensure seedlings are not subject to either drought stress or inundation. Removal of spring peaks or modification of early summer flows--either through depletion or augmentation--not only reduces native species establishment, but it also provides a competitive advantage to non-native invasive species that have less exacting establishment and maintenance requirements and which often respond favorably to flow stabilization associated with the removal of spring peaks (Graf 1982). Two local examples are discussed below, but it should be noted that there is an extensive body of literature on this issue (e.g., Rood and Mahoney 1990, Hill et al. 1991, Stromberg and Patten 1993, Scott et al. 1993, Scott et al. 1994, Auble et al. 1995) and that local examples are provided to allow a comparison between the project impacts listed in the DEIS with actual impacts observed in nearby locations.

The first local example is that of the Diamond Fork, in central Utah, a stream in which the natural hydrograph has been modified so that peak flows in most years occur during the summer and not during the spring (i.e., it is an augmented flow stream). As a result, the previously dominant woody species have established in only 2 years since 1915-the year in which the hydrograph was first altered as result of irrigation deliveries (Gecy and Gecy 1998). The Central Utah Water Conservancy District recently acknowledged that the past history of irrigation releases has resulted in substantial long term riparian decline through inundation of establishing seedlings (CUWCD 1998).

The second example is that of the Duchesne River, from which flow is diverted for irrigation deliveries. Here, native species establishment is hampered by either reduction of peak flows in most years or by rapid spring flow depletion during flood years. For example, in 1997, the river dropped four feet in a 10-day period that coincided with the cottonwood and willow dispersal period, resulting in high seedling mortality and no net establishment following the spring flood (WWS 1998). In both cases, modification of the natural hydrograph led to riparian decline and channel narrowing, if it occurred, was not sufficient to offset the loss of most of the former riparian width.

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Just as important to riparian vegetation maintenance is the summer base flow level. Riparian vegetation is dependent on the alluvial aquifer. While upland vegetation can tolerate drought, riparian vegetation requires access to a water table throughout the entire growing season (Stromberg et al. 1994). Consequently, changes in either water table recharge flows (such as spring floods) or the growing season water table can result in mortality. Tolerance of individual species to water table depletions varies. For example, Patton and McKee (1995) identified that some species of cottonwoods could adjust to water table depletions of up to a foot; but that adverse to lethal effects could be expected for herbaceous species with water table reductions of 0.5 foot, even if only for two to four weeks.

Summer flow augmentation can also adversely affect riparian vegetation. With augmented flow, both establishing seedlings and mature plants can suffer mortality through inundation. The extent of mortality depends upon the species. Some species, such as water sedge, tufted hairgrass and Booth's willow, prefer a high water table throughout the growing season. These species are often identified as obligate or facultative wetland species (see Table 2 for a list of species in the project area and definitions of wetland status). Other species are restricted to areas in which there is only short duration or no seasonal flooding. A common response to flow depletion is almost always a replacement of the plant community type from one dominated by obligate wetland species to one dominated by facultative or upland species with a general increase in non-native, invasive species (Harris et al. 1987, Smith et al. 1990, Stromberg et al. 1994).

Geomorphic Factors and Riparian Responses

Topographic position and local site conditions (e.g., soils, floodplain morphology) provide an additional set of factors affecting current riparian vegetation distribution (IHI 1995, Scott et al. 1994). Similar factors affect how riparian vegetation responds to flow changes. Channel narrowing with subsequent vegetative encroachment is widely touted as a common response to stream flow depletion. However, the response to channel narrowing is extremely variable, can range from narrowing to lateral degradation and in most cases, is accompanied by a loss of most of the total riparian width (IHI 1995). Channel narrowing in response to flow depletions more commonly occurs along steep gradient streams (IHI 1995) and has been observed along Sixth Water (a tributary to Diamond Fork) with removal of high flows; in this case, channel narrowing has been accompanied by a loss of 80% of the former riparian width for a net loss of riparian wetlands (WWS 1996). In contrast, Duchesne River flow depletion has led to channel narrowing in only one-third of the channel length; the remaining stream has responded to flow depletions by widening (Brink and Schmidt 1996). Regardless of whether the stream widened or narrowed, most of the original riparian width has been lost (WWS 1998).

Sediment Transport as a Key Factor

A very important factor in riparian and channel responses to flow changes is how the proposed action will affect sediment transport. In most cases, channel degradation and/or lateral erosion has been observed below dams as sediment is trapped and the erosivity of the flows below the dam increases (Williams and Wolman 1984). Aggradation can also occur below dams, but in most cases

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where aggradation occurs, it adversely affects fish habitat by filling in pools, changing pool-riffle ratios, and adversely affecting spawning habitat (Hill et al. 1991, McBain and Trush 1997).

Changes in sediment transport are often ignored in riparian and aquatic impact assessments, yet can be the key to understanding downstream effects of dams (Ligon et al. 1995). Instead, surrogate measures are used to address how flow changes will affect the channel. The dominant discharge is representative of the range of flows that define the channel (Andrews 1980). Since the 1940's there have been various attempts to quantify the dominant discharge. Three methods have been developed: use of a set flow recurrence interval, estimated at 1.5 years (Wolman and Miller 1960), identification of the bankfull discharge (Wolman and Miller 1960), and calculating the effective discharge--or the range of flows that move the most sediment over a period of time (Andrews 1980). Research conducted since 1960 has indicated that:

- The bankfull discharge can only be used as an estimate of the dominant discharge in a stable stream and not one with a currently altered or to be altered flow regime.
- The 1.5 or any other set recurrence interval flow can not be used to identify the dominant discharge (Pickup 1976, Andrews 1980, Nash 1994) as the recurrence interval of the dominant discharge can vary from less than 1 year (upper Missouri River) to more than 3 years (Sevier River). Averaging "less than 1 year" to "more than 3 years" to get a dominant discharge equivalent to a 2-year recurrence interval flow is not valid.
- The effective discharge can provide the most reliable identification of the dominant discharge (Andrews 1980, Nash 1994).

Effective discharge is defined as the modal value within a sediment transport curve calculated from flow durations (based on daily values) and the sediment transport rate (Andrews 1980; Andrews, pers. comm.). Thus the dominant discharge is a function not only of the magnitude of flows, but also the frequency distribution of flows, their duration and how they affect the sediment transport rate. Both reductions in sediment supply and increases in flow duration will cause the effective discharge to occur at a lower flow.

4.1.3 Riparian Wetland Assessment Methods

As described above, the factors affecting riparian vegetation and the range of responses to stream flow changes have been well documented. Numerous methods have been developed to use what is known about riparian responses to predict the effects of flow changes. Three methods are described below, all of which were developed prior to 1997, and thus available to the BOR to use in the riparian wetland impact assessment in the DEIS. The methods differ in their approach, but they all identify both spring peaks and flow durations as critical assessment hydrologic variables and require an identification of the vegetation along the stream to be affected.

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The first method was developed by the BOR for the Animas-LaPlata project (Patton and McKee 1995). For this project, the BOR developed an intensive GIS modeling approach to assess the impacts of flow depletions associated with the Animas-LaPlata project. Three basic premises of the model were:

- Riparian vegetation is dependent on ground water and any significant change in the water table would have adverse effects,
- Certain riparian vegetation species are dependent on the magnitude, duration and timing of flood flows, and
- Modification to either factor would cause riparian impacts.

The method required both an accurate identification of hydrologic changes and identification of responses of key plant species and communities to changes in various flow parameters. Associated with the model was an understanding that species would respond differently to flow changes and that differences in responses needed to be included in the assessment. In other words, a blanket generalization about riparian impacts could not be made without identifying the dominant species and their likely responses to a range of hydrologic parameters. Two model shortcomings, however, included a lack of accurate hydrologic characterization and an overdependence on computer modeling at the expense of accurate site characterization.

A method developed by the USGS National Riparian Ecology Research Center (NRERC) uses an approach similar to the Instream Incremental Flow Methodology in which hydraulic analysis along surveyed cross sections is used to identify changes in habitat parameters (Bovee 1982). The NRERC method simply extends the analysis to the floodplain. The method identifies the mapped position of riparian vegetation community types relative to inundation duration (per cent of time any point is inundated) based upon daily discharge data. Impacts are then assessed by comparing the new flow duration with the current duration as it relates to the specific type of vegetation. This method does not address changes in flood frequency and the authors acknowledge that this factor still needs to be considered in impact analyses. However, implementation of this analysis along the Gunnison River, Colorado identified that major riparian changes were masked by simple evaluation of average annual or even average monthly flows.

The Wetland Hydrologic Index model developed by the COE (Davis 1996) provides an index of hydrologic change that is based upon surveyed wetland elevations, daily flows and exceedances, and riparian community types. This model focuses on the per cent of time during each month that the water table would be reduced below a level necessary to support riparian wetlands. The assessment combines a detailed hydrologic analysis based on daily values with a qualitative assessment of community response. Of the three approaches discussed here, this approach is the least time-consuming, but still requires daily flows to calculate flow durations under both pre and post project conditions.

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Although none of the three models discussed here address all the important factors affecting riparian vegetation, they all acknowledge:

- The importance of both spring floods and flow durations as key assessment variables,
- The need to evaluate impacts based on daily flows and not annual or monthly averages,
- The importance of plant species and community types in evaluating potential impacts, and
- The need to address potential geomorphological change in the impact assessment, particularly if sediment supply or flow durations are to be substantially changed.

4.1.4 Narrows Project Impact Assessment

Middle Gooseberry and Cottonwood Creeks

As described above, the complexity of riparian systems requires that multiple variables be considered in evaluating impacts. There has been no perfect impact assessment model developed, but there are methods to assess changes in the key factors affecting riparian vegetation. At a minimum, riparian impact assessments need to address changes in

- Hydrologic support (magnitude, timing and duration of both spring peaks and summer base flows),
- Riparian vegetation parameters (dominant species and communities, required hydrologic regimes, drought or inundation tolerances)
- Channel morphology responses as a result of changes in sediment regime or flows, and
- Relationships among flow changes, riparian vegetation responses and channel morphology.

None of these variables or their interactions were addressed in the impact assessment in the DEIS. Instead, the impact assessment was based on a single modeled average monthly water table value. Additionally, impacts were only considered for Middle Gooseberry Creek.

The Middle Gooseberry Creek analysis identified that the average May monthly water table would only drop 0.5 to 0.9 feet, and therefore it was insignificant and would cause no riparian impacts. The analysis ignores clearly documented evidence that riparian vegetation is affected by changes in the magnitude, timing and duration of flows, and that established methods are available to assess the impacts of changes in these parameters. The analysis also ignores clearly documented evidence of channel degradation and erosion and riparian decline downstream of dams.

However, even if the DEIS impact assessment included consideration of the key variables, data in

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supporting documents (Franson and Noble 1991b) does not support the DEIS statement of no impact. Estimated water table reductions of one-half foot or less would occur on only one of 23 transects. Water table decreases range up to 1.4 feet and average close to 1 foot in May followed by water table reductions of 0.5 feet during the early summer. May through early June are important hydrologic periods for riparian species in terms of providing alluvial aquifer recharge and plant establishment (see section 4.1.2). Although peak flows can occur between April 17 to June 10, they mostly occur in mid-May. For example, in 1968, the year the DEIS uses to represent an "average year", flows at the Gooseberry Creek near Scofield gage peaked at 214 cfs on May 22 and remained above 80 to 100 cfs for 30 consecutive days and above 150 cfs for half of that time period.²

The dominant riparian vegetation along Middle Gooseberry Creek, as identified from BOR files, is listed in Table 2.³ The dominant vegetation includes three obligate (OBL) wetland sedge species, one facultative wetland (FACW) sedge species, one facultative wetland (FACW) grass and one obligate (OBL) wetland rush. Table 2 provides a summary of rooting characteristics and preferred hydrologic regimes of these species as developed from published literature (e.g., Padgett et al. 1989, Manning et al. 1989, Manning and Padgett 1995, Aquatic and Wetland Company 1997). All of the dominant riparian species require a water table at or above the surface at least during the spring, with moisture retained in the rooting zone throughout the growing season.

Based on the data presented in Table 2 and looking simply at individual species responses to average water table declines of 0.5, 1.0 and 1.4 feet, without considering any other factors (as was done in the DEIS), would lead to the following predicted impacts. These impacts are based on species-specific rooting characteristics and required hydrologic regimes. Because looking strictly at average monthly water table drops mask the importance of peak flows in alluvial aquifer recharge and also ignores the effects of cumulative monthly water table drops (i.e., extended drought periods following removal of a key recharge event), the predicted responses are likely underestimated.

Riparian impacts based upon responses of the dominant riparian species in the project area, as summarized in Table 2, would be as follows:

- A water table decline of 0.5 feet during the critical month of May would result in the loss of

² The average monthly flow for May 1968 provided in the DEIS is 82.1 cfs, reflecting lower flows during the early part of May. As noted earlier, use of an average monthly flow masks the biological importance of recurrent peak flows above 200 cfs. To go from a May average of 82 to 38 cfs means the critical spring peaks lasting almost a month will be removed. This very important fact is not disclosed in the DEIS.

³ The dominant species were identified during the period 1988-1991 and wetland mapping was done in 1988. There has been no documented review of the site by a botanist for at least 7 years and no review by a wetland specialist since 1988. Therefore, it is unknown if the data on file accurately represents current conditions. In lieu of more recent data, the species listed in Mt. Nebo (1992) as dominant species were used in this report.

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Table 2. Characteristics of the Dominant Riparian Species along Gooseberry Creek.				
Species	Habitat	Wetland Indicator Status	Habit	Preferred Hydrology
<i>Carex aquatilis</i> (Water sedge)	wet and boggy meadows; typically organic soils	OBL; high value for streambank stabilization	tufted perennial, long rhizomes	Occupies continually wet sites and prefers standing water up to 3' in depth; can tolerate water table depth up to 6 inches
<i>Carex microptera</i> (Small wing sedge)	wet meadows and fens; organic soils	FAC	densely tufted ; no or very short rhizomes; requires seed establishment to spread	Requires water table within the rooting zone during growing season
<i>Carex nebrascensis</i> (Nebraska sedge)	wet meadows, particularly abundant along moving water	OBL; very high value for streambank stabilization	perennial, strongly rhizomatous	Requires soil saturation early in the growing season with water table within 12 inches of surface; most roots in upper 4-8 inches
<i>Carex rostrata</i> (Beaked sedge)	swampy meadows, pond and meandering stream margins; not found on other stream types; soils mostly organic	OBL; high value for stream bank stabilization	perennial, long rhizomes	Requires seasonally saturated hydrologic regime with water table within 9 inches

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Table 2 (Continued)				
Species	Habitat	Wetland Indicator Status	Habit	Preferred Hydrology
<i>Deschampsia cespitosa</i> (tufted hairgrass)	wet meadows, high elevation meandering streams and ponds	FACW;medium to high value for streambank stabilization--not as much value as above sedges	tufted perennial, short rhizomes; requires seed establishment to spread	Requires seasonal saturation but can tolerate water table decreases below 18 inches late in growing season
<i>Juncus arcticus</i> (wiregrass)	seeps and springs, meandering stream and pond margins; mostly mollisols and organic soils	OBL; high value for streambank stabilization	perennial, stout creeping rhizomes	
Wetland indicator status based on Reed (1988) and reflects the frequency with which the species occurs in wetlands. Obligate (OBL) species are found 99-100% of the time in wetlands, Facultative Wetland (FACW) species are found from 67 to 99% of the time in wetlands and Facultative (FAC) species occur equally often in wetlands as in uplands.				

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water sedge, beaked sedge, and adversely affect Nebraska sedge.

- A water table decline of 1.0 feet during the critical month of May, would result in the loss of water sedge, beaked sedge, Nebraska sedge, small wing sedge and adversely affect tufted hairgrass and wiregrass.
- A water table decline of 1.0 feet during the critical month of May followed by continued water table declines of 0.5 during June⁴ and 0.3 feet during the remaining growing season would result in the loss of all of the dominant riparian species along Middle Gooseberry Creek. These species would likely be replaced by species such as clover, dandelion, yarrow, thistles and sagebrush. The loss of the native species could also provide for the expansion of the noxious weeds already existing in the area, particularly musk thistle.

The DEIS contends that the stream would naturally narrow as sediment is deposited and plant species expand into the new floodplain. The DEIS neglects to mention that sediment supply downstream from a dam is limited, and the sediment source for this supposed natural deposition, unless it comes from instream bank erosion, is unclear. Even if a supply of sediment were available, the capability of species to expand into the new floodplain area needs to be considered. The species with the greatest potential for expansion through vigorous vegetative growth require a high water table (see Table 2); conversely, the species with the greatest tolerance to water table changes (tufted hairgrass, small wing sedge) establish only by seed and may not rapidly colonize the area.

In essence, the Project would be releasing "hungry water" (devoid of sediment and highly erosive as it attempts to adjust to a new sediment regime downstream of a dam) into an area in which the water table reductions would result in mortality of the dominant riparian wetland species and there would be insufficient time for the species to colonize the newly exposed channel bed. Thus, in contrast to statements in the DEIS on p.2-13 that the stream would naturally adjust by narrowing, the loss of the herbaceous riparian vegetation and their associated high sediment stabilization abilities, would likely result in stream widening and/or downcutting. Stream downcutting would be particularly damaging along Middle Gooseberry Creek as it would then allow the stream to serve as a drain for the adjacent extensive wetland complex.

For Cottonwood Creek, the DEIS used a different impact analysis. Here, riparian impacts were assessed based on changes in dominant discharge. The DEIS states on page 3-83 that "the generally accepted value of dominant discharge is the peak discharge having a recurrence interval of about two years." As discussed in section 4.1.2, this is not a valid definition for the dominant discharge. The dominant discharge is best defined by the effective discharge. The effective discharge, by definition, changes with changes in flow duration or sediment transport. Increased flow durations would result in sediment mobilization at a lower discharge than currently occurs. As such, the dominant

⁴ It appears that the June water table decline might be even greater as the Project Operations Study indicates that flows of 1 cfs and not 8.4 cfs would occur in June in an "average" year.

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discharge argument in the DEIS is flawed and the potential for stream degradation requires re-examination. The effective discharge and the duration of the effective discharge must be identified to evaluate riparian and stream channel impacts.

It is also important to identify the potential responses of the riparian vegetation to increased flows. Some willows require high water tables throughout the growing season (such as wolf's willow) while others tolerate water level changes and spring flooding but do not survive under prolonged inundation (such as coyote willow). Even if the stream channel did not degrade, riparian vegetation could still be lost by inundation.

The contrast in the impact assessment methods used in the DEIS for Gooseberry Creek and for Cottonwood Creek is troublesome. The Cottonwood Creek analysis identifies that no riparian impacts would occur because the 2-year flood would not change; conversely, the Gooseberry Creek analysis identifies that no impacts would occur in spite of a substantial change in the 2-year flood and elimination of almost all flood peaks. No explanation is provided for the circular logic applied in the DEIS.

Other Headwater Streams and Basins

Although 51% of the total annual flow will be depleted from lower Gooseberry Creek, primarily during the critical spring period, there was no assessment of potential riparian impacts. The existing data suggests that an estimated minimum of 15 acres of riparian wetlands and waters of the United States would potentially be affected by loss of spring peak flows along this creek.

Lower Gooseberry Reservoir is currently operated by the US Forest Service as a relatively stable reservoir without annual drawdowns. The stable operation, combined with the reservoir location within an apparent historic wetland basin supports an extensive wetland and aquatic bed complex, of which at least some are likely jurisdictional wetlands, and the rest are waters of the US. Both inflows and outflows to the basin and its wetland system will be changed by the project. Project impacts to these wetlands were not identified in the DEIS.

Also not discussed in the DEIS were impacts to the wetland resources associated with the operation of Scofield Reservoir. As a water supply reservoir built in the 1940's, it is doubtful that any of the area would be classifiable as jurisdictional wetland, but the reservoir is still a waters of the US that is within the downstream effects area of the proposed Narrows Dam. Impacts to shallow water wetland habitat also need to be considered in the Fish and Wildlife Coordination Act Report.

Table 3-2 of the DEIS shows that the project would also deplete critical spring flows from Fish Creek and the upper Price River by 25 to 100%, including dropping the average May flows to 0 in some years. Riparian resources along these creeks were completely ignored in the DEIS and supporting documents and there is no way to estimate potential acres of wetlands affected. Complete spring peak removal would adversely affect riparian resources.

There was no assessment in the DEIS of the effects of associated features on wetland resources.

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These include campground construction along the northwest margin of the proposed Narrows Reservoir, a projected increase of 46,400 recreation visitor days in the Gooseberry Creek area as a result of the project, relocation of State Road 264, temporary construction roads, and rehabilitation of the Narrows Tunnel near Cottonwood Creek.

The DEIS also fails to assess impacts to wetlands in the Narrows Basin outside of the reservoir margin. However, it is unlikely that campground construction could completely avoid the wetlands and small drainages rimming the proposed northwest reservoir boundary. Likewise, the State Road 264 relocation would either have to fragment existing aspen groves or fill wetlands along the proposed reservoir eastern margin adjacent to the current Road 264 location. These wetlands were not delineated in the 1988 mapping. It is likely that this area was originally identified as outside the project area of influence as clear stream channels and wetland vegetation are visible similar to those areas delineated as wetlands in 1988. The lack of a secondary recreational impact assessment is unclear as the DEIS identifies that recreational use in the area is "already crowded", and any increases in recreational use would require mitigation to avoid further wetland impacts. There is no information available to assess the impacts of temporary construction roads and the rehabilitation of the Narrows Tunnel. Analyses of the potential impacts to these wetlands should have been included in the DEIS.

Valley Streams

There is no data in the DEIS or the BOR files on riparian wetlands along the Price or San Pitch wetlands and no description of how the proposed depletions or water quality changes would affect wetlands. Of particular importance would be depletion of 18 to 23 % of the spring flow peaks along the lower Price River. Spring peak flow depletions would substantially affect cottonwood and native willow recruitment potential and favor tamarisk expansion. Although cottonwood can occur up to 8,500 feet in elevation, the BOR data on file did not mention this species as occurring within the headwater basin. Tamarisk is typically restricted to areas below 5,000 to 6,000 feet in elevation. Thus the greatest potential for tamarisk expansion at the expense of native willows and cottonwoods is below Helper.

The effects of spring peak flow depletion on the endangered Colorado River squawfish are extremely important. The FWS identified that one of the primary sources of the species' decline is a change in the "timing, duration and magnitude" of spring flows as a result of dams and water diversions (FWS 1992). These hydrologic changes affect the squawfish at all stages of its life history. As adults, squawfish occupy seasonally inundated riparian floodplains and backwaters in the spring and early summer. During the mid to late summer, squawfish migrate into the main stem channel. Spawning occurs in the spring and lasts four to six weeks. Critical to successful regeneration is the ability of larval squawfish to migrate from shallow backwater nursery areas into the main river. This is generally accomplished during the declining limb of the spring flood peak. Further modification of the Price River spring peak could have dramatic effects on the squawfish long term reproductive success. Although the importance of spring floods to squawfish reproduction were identified in 1992 and the information available to the BOR, the project effects on Price River spring peaks were ignored in the DEIS.

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Non-Riparian Wetlands-Sanpete Valley

According to the DEIS, the proposed Narrows Project would construct 16.8 miles of new pipelines, a diversion dam in Cottonwood Creek, and a number of regulating ponds. The DEIS does not provide wetland information for any of these features. Yet, the new pipelines would cross 28 streams. Regardless of whether or not these crossings contain jurisdictional wetlands, they are all waters of the US. The diversion dam location is also not specified and the DEIS is unclear as to whether a new diversion dam would be required or if an existing facility would be rehabilitated. Either scenario would impact waters of the US, and would require a Section 404 and/or streambed alteration permit, but was not disclosed in the DEIS.

Of equal or greater concern are the project impacts on the spotted frog. An interagency Conservation Agreement (Agreement) was signed by the BOR on March 16, 1998. The purpose of the agreement is to implement measures that will prevent the spotted frog from being listed as a threatened or endangered species. The Agreement identifies that conservation measures within of each of five distinct GMU's are necessary to the overall species viability and individual population goals are set for each GMU. Within the Sevier River GMU, the spotted frog only occurs in five locations, all within the Narrows Project service area. Currently, breeding frogs occur adjacent to the San Pitch River immediately below agricultural fields that would receive supplemental project water (Hovingh, pers. comm.).

The Agreement identified that the major threats to the spotted frog within the Sevier River GMU were loss of habitat due to agricultural practices, and water development for municipal and agricultural purposes. Because of the isolated nature of occupied habitat, any loss would be considered significant. The Agreement also identified "surveys, studies, habitat enhancement, habitat acquisition and mitigation" as necessary actions for water development projects. The DEIS proposes none of these.

In contrast to the requirements specified in the Agreement, potential impacts to the spotted frog in the Sanpete Valley were cursorily dismissed. The DEIS identified in section 3.1 (threatened and endangered species) that changes in water quality would affect the spotted frog, but did not discuss if the project would change water quality or what the impacts might be. In section 3-17, selected ground water well concentrations were displayed and the DEIS states that "the data gathered showed no significant concentrations of trace of toxic elements in the ground water." Table 3-30 displays the ground water results. Concentrations of boron and selenium, contaminants known to affect wildlife reproductive success, have been found at or near the standards for wildlife. Although the state of Utah does not have a wildlife standard for boron, nearby states have adopted a standard of 500 ppb as a level at which adverse effects could be expected. Boron concentrations of 450 ppb are listed as occurring in the project area. Likewise, the wildlife standard for selenium is 5 ppb and selenium concentrations of 5 ppb have been identified in the area. Impacts to spotted frog reproduction would prevent population from reaching its target goal of 1000 individuals from the estimated 25 in the area. Potential effects of these two contaminants on the spotted frog and the "surveys, studies, habitat enhancement, habitat acquisition and mitigation" identified in the Agreement need to be completed and discussed in the DEIS for it to be in compliance with the

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Agreement that the lead agency has signed.

Hovingh (pers. comm.) has suggested that the source of water supporting the breeding frogs along the San Pitch River be investigated as part of the necessary impact analysis for this DEIS. If hydrologic support originates from a deep mountain aquifer, the project would likely not change the water quality in the springs supporting the frog. Conversely, if the water comes from return flows from adjacent agricultural fields, impacts could occur. Relationship of the known spotted frog locations to areas receiving Project water and identification of the ground water support sources need to be included in the "surveys and studies" portions of the Agreement and presented in the DEIS.

4.2 Project Impacts-Functions and Values

The DEIS stated that wetland impact assessment would take into account wetland functions and values, but that "because the primary function of wetlands is wildlife habitat, the procedure known as HEP [a single species wildlife assessment model] was used to evaluate the wetland values." (page 3-50, DEIS). This is curious as the COE implementing regulations (33CFR 320.4[b]) identify that wetland functions include fish and wildlife habitat, maintenance of ground water supplies, purification of water, and prevention of flooding. The National Research Council (1995), at the direction of the White House Office on Environmental Policy, identified eight major functions typically performed by wetlands, including three hydrologic functions, three biogeochemical functions, one habitat maintenance and one food web support function. The National Research Council identified that the use of HEP was not appropriate for wetlands functional assessment as it was "too narrowly focused on fish and wildlife to be used in routine regulatory assessments of wetlands". Additionally, the previous wetland evaluation of the Narrows Basin (the only site for which a functional assessment has been performed) identified that the highest functions and values of the Basin wetlands were for sediment stabilization, sediment retention, nutrient transformation, flood flow alteration, ground water discharge, production export to aquatic systems, aquatic life/diversity, general wildlife diversity and abundance, and wildlife breeding habitat (Snyder 1989). Of nine functions rated high by Snyder (1989), only two were associated with wildlife.

The only site for which even a HEP analysis was completed was the Narrows Basin. In support of the HEP approach, Mt. Nebo (1992) describes wetland communities in the Narrows Basin as being "common to high elevation, mountain areas", containing few species, and therefore not unique. Yet, of the 150 species listed as occurring in the Narrows Basin project area, 65 species (43%) occur in wetland and riparian habitats. This represents a relatively high number of species, considering the fact that only limited field work was conducted in the project area. Of these species, 12 are indicative of high elevation boggy conditions and the DEIS (p. 3-93) describes organic and histic soils in at least portions of the Narrows Basin. High elevation wetlands underlain by deep organic soils have been identified as unique and deserving of special protection by the Grand Junction office of the COE (COE 1997). There is no data on file to check the soils characterization provided in the DEIS, but if correct, it indicates some unique wetland qualities. The organic soils, relatively high number of wetland plant species and high interspersions of habitats, suggests that two other functions and values provided by the Narrows Basin wetland complex are preservation of biodiversity and

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uniqueness/heritage values.

Mt. Nebo also identified that the area was overgrazed in the 1880's with grazing controls added in 1908. The significance of this statement, which is repeated several times in the DEIS, is unclear. Much of the western United States was overgrazed in 1880, but many areas currently support high quality wetlands. According to the DEIS, grazing is still allowed in much of the project area, with a rest-rotation system used on land under USFS administration. The current effects of grazing on wetland and riparian habitats in the project area are unknown. The vegetation section states on p. 3-56 that "cattle and sheep grazing is still allowed in the area" but does not discuss the current condition. The land resources section (3.11, p. 3-76) of the DEIS in discussing current grazing allotments states that "range conditions and grazing were discussed earlier in the vegetation section". Neither section states the current condition of the vegetation and the actual nature of current grazing impacts. What is surprising is that the HEP analysis results presented in Mt. Nebo (1992) provide a picture vastly different from an overgrazed situation. Here the average cover of wet meadow vegetation is 92% with an average height of 8 inches and a maximum height of 12 inches. No date is given for any of the studies, but it would be very unusual for an overgrazed site to reach stubble heights any where close to 8 to 12 inches at any time during the growing season. The current and past grazing use of the area seems to be used to support a conclusion of no special significance, rather than an actual assessment of the site's functions and values.

The DEIS provided no assessment of the functions and values provided by riparian wetlands along Gooseberry or Cottonwood Creeks. Therefore, the degree to which functions and values would be impaired by the proposed flow changes cannot be determined. As indicated in previous descriptions, Gooseberry Creek is meandering to highly meandering, and bordered by dense vegetation, up to 2000 feet in width. Snyder (1989) identified sediment stabilization, nutrient transformation and food export/breeding habitat functions as being highly valuable functions performed by the riparian wetlands. Changes in these functions need to be assessed. This is particularly important as the Project would result in the loss of the native riparian species currently of high value in sediment stabilization.

Likewise there was no assessment of functions and values provided by other wetlands or waters of the US that would be affected by substantial changes in hydrologic support or water quality. Yet, the littoral zone and aquatic bed complex of lower Gooseberry Reservoir likely provides high wildlife habitat value and 250 acres of a shallow littoral zone in Scofield Reservoir would be converted to a barren mudflat. Threatened and endangered species habitat is provided by the Price River riparian wetlands and the Sanpete Valley wetlands support the only population of the spotted frog in the Sevier GMU. Changes in these functions and values as a result of the project must be addressed for the DEIS to be in compliance with its own statement that impacts would be considered significant if project implementation would "result in **any** loss of wetland acreage (extent) or function".

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5.0 ADEQUACY OF PROPOSED COMPENSATORY MITIGATION

The DEIS proposes two types of compensatory mitigation for wetland and riparian losses. The first is to replace the wetlands inundated in the Narrows Basin on a 1:1 basis through either creation of new wetlands in the Gooseberry Creek Basin, restoration of wetlands along Mud Creek or enhancement of existing wetlands in the Manti Meadows. The second measure is identified in the DEIS as a measure to mitigate for adverse effects to fisheries in Middle Gooseberry Creek. The adequacy of each mitigation type is discussed separately below. No mitigation is proposed for any of the other potential impacts to wetlands, riparian habitats or other waters of the US.

5.1 Narrows Basin Wetlands

The DEIS proposes four alternatives to mitigate for loss of 100 acres of wetlands in the Narrows Basin. These are:

- Create wetlands within most of a 86 acre⁵ parcel west of lower Gooseberry Reservoir in an area currently dominated by an upland sagebrush community. Creation would be accomplished by re-contouring and supply of irrigation water.
- Create 72 acres of wetlands adjacent to the proposed Narrows Reservoir in an area currently dominated by an upland sagebrush community. Creation would be accomplished by re-contouring and release of water from Fairview Lakes.
- Enhance wetlands within a portion of a 160 acre parcel along Mud Creek primarily by removing cattle. Some stream channel improvements and contouring to produce a series of bermed wetland cells would also be done.
- Create up to 72 acres of wetlands in Manti Meadows by providing return flows to an existing low elevation wetland in the San Pitch watershed. The goal would be to enhance waterfowl habitat.

None of the alternatives by itself provides for a 1:1 mitigation ratio. As previously discussed, the Project will impact a minimum of 200 acres of wetlands (just considering the headwaters basin) and not the 100 acres identified in the DEIS. The total proposed mitigation acreage, prior to assessing feasibility, is 230 acres wetland creation and 160 acres of wetland enhancement. To meet current mitigation guidelines, creation must be done to at least a 1:1 ratio and enhancement should be done according to a 3:1 or greater ratio. To meet current guidelines and mitigate for the actual impacts, a 1:1 mitigation using creation would require using portions of all three proposed creation sites (2

⁵ The DEIS provides contrasting numbers for wetland mitigation on pages 2-19 and 2-34. These numbers differ by up to 60 acres. So as to not overestimate the wetland mitigation potential the lower set of numbers provided on page 2-34 was used.

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sites in the Gooseberry Creek drainage plus the Manti Meadows site). Enhancement acres could be used to reduce the total created wetland acreage, but would need to be done at a 3:1 ratio. The DEIS states on p. 2-15 that "the actual mitigation that is implemented could be a combination of alternatives". However, Appendix D which lists the wetland mitigation costs associated with the Project identifies that only one site would be considered and included in the Project mitigation costs. The inconsistency in statements is confusing and very important if the DEIS commits to mitigation that is not adequately funded.

A larger concern than the mitigation ratio is that only one of the proposed mitigation sites (near Mud Creek) appears reasonable. The Manti Meadows site should be discarded as it would provide out-of-kind mitigation in a completely different watershed and geomorphic setting than the impact area. It would replace loss of a unique high elevation basin providing 11 distinct functions and values, none of which is waterfowl habitat, by low elevation waterfowl habitat. Also the enhancement value of return flows is questionable, particularly since levels of boron and selenium at or near the wildlife threshold values occur in the project area.

The two sites within the Gooseberry Creek Basin (next to the proposed Narrows Reservoir and the lower Gooseberry Reservoir) are dominated by sagebrush. There is no soils data for either of these two sites but sagebrush typically occurs on coarse-textured soils. Permeabilities of greater than 0.2 inches per hour (0.4 feet per day) are not uncommon in areas dominated by sagebrush. Wetland creation on these sites would result in a water loss through seepage alone of 5,184 to 6,192 acre-feet per year⁶ for the Narrows Reservoir and lower Gooseberry Reservoir sites, respectively. This is more water than is available in the upper Gooseberry Creek Basin. Use of these sites for mitigation would also defeat the project purpose by requiring more water than the project proposes to deliver.

Based on photographs supplied by the BOR contractor, Mud Creek is a heavily overgrazed site with some existing wetlands and mesic pasture adjacent to the creek. Mud Creek itself has high cut banks and the stream appears to act as a drain for the adjacent pasture. Soils here are described by the NRCS (1988) as a mixture of Silas and Brycan loams. Brycan loam is a well drained soil with a potential natural community of big sagebrush and bluebunch wheatgrass. Wetlands would not develop in Brycan soils without substantial water loss or use of a clay liner.

Silas loam is somewhat poorly drained with a potential natural community of silver sagebrush, sedges, and wiregrass. Water table depths range between 20-25 inches below the soil surface in spring and 35 to 45 inches below the soil surface during the summer, indicating that additional water would be necessary in some areas to raise the water table to levels able to support a wetland community. Simple removal of grazing would not cause wetlands to appear in areas where the water

⁶ Acre-feet of seepage calculated by: 0.4 ft/day times 180 days times # of acres in the proposed mitigation site. A six month season during which water would be supplied (May-October) was assumed in the seepage calculation as seepage occurs whenever water is supplied regardless of evapotranspiration rates.

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table is more than 12 to 18 inches below the surface in the spring. Additionally, the Silas loam is a mineral soil with a seasonally fluctuating water table that would not support the species occurring in the Narrows Basin which require permanently saturated conditions and organic soils.

Thus, while soils in portions of the Mud Creek site could support wetlands and would provide some sediment stabilization functions, the ability of the mitigation to replace all eleven lost functions and values of the Narrows Basin wetland is doubtful. If the goal is to replace all functions and values of the Narrows Basin wetlands, this site would not be suitable.

The likelihood of mitigation success at Mud Creek according to the proposed plan of removing grazing with some recontouring and no other measures is questionable. One of the immediate responses often seen following removal of grazing in an overgrazed site is severe proliferation of noxious weeds (Aarft 1994). Mitigation development would require a strong weed control plan and allocation of O&M costs for weed control. The mitigation measure of raising the water table in a cut bank stream through the use of check dams has had limited success and is poorly suited to some stream types and flow regimes (see further discussion below).

The mitigation cost breakdown for Mud Creek provided in Appendix D provides only for land acquisition (\$110,000) and fencing (\$26,000). There is no allocation of costs for weed control, planting if the site does not recover sufficiently to at least provide sediment stabilization, recontouring to create a series of berms and swales, installation of check dams, or design. It also does not account for the mandatory COE 5-year mitigation monitoring requirement. The earthwork cost alone to create berms and swales across the property (\$7-10 per cubic yard of material moved) could increase the mitigation costs by up to \$200,000. Weed control, planting contingencies measures and monitoring would add another \$40,000. Without more details of the proposed plan the actual mitigation costs can not be identified, but it appears that the DEIS grossly underestimates the mitigation costs by almost 70 per cent, without including design and channel structure costs.

Overall, the DEIS overstates the availability of mitigation sites as only one of the four sites could both support some wetlands and at least provide some measure of in-kind mitigation by mitigating within the Scofield Reservoir Basin. The DEIS also dramatically underestimates the costs to develop a successful mitigation and misrepresents the true costs of the project.

5.2 Middle Gooseberry Creek

The DEIS states that it will mitigate for adverse effects to the Middle Gooseberry Creek fisheries through the use of "man-made improvements" to narrow the channel and increase the depth of flow. Page 3-53 of the DEIS states that the "intent will be to create a stream channel that ...will have the same depth of flow as under baseline conditions" and p. 3-59 states that the "project plan includes channel modification in the middle segment of Gooseberry Creek to keep the flow levels up ...[and not reduce] the depth of flow in the stream". This would require raising the water table by up to 1.4 feet. Medium stage check dams would be necessary to accomplish this. However, medium stage check dams are poorly suited to meandering streams and typically result in bank erosion instead of

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their intended goal (Rosgen and Fittante 1986). In fact, an extensive study of the success rate of instream structures in Utah streams (URMCC 1995) concluded that projects that used structures strictly to change a stream's character following changes in flows or sediment regime typically fail. The study also found a high failure rate in projects that used structures without consideration of stream dynamics and morphology. This is important, as the Narrows Dam will substantially change stream dynamics and trap sediment. The URMCC study found similar results as Rosgen and Fittante (1986) in that stream morphology dramatically effected the success of instream structures and that use of structures in low gradient, meandering streams had poor documented success. Finally, the URMCC (1995) noted that while use of instream structures to promote fish habitat has had mixed success, the "overall effectiveness of structures on riparian condition has not been positive."

Instead of mitigating for fish habitat impacts, the proposed measure would not maintain riparian vegetation and would promote channel widening and/or degradation, thereby increasing the fishery impacts. There is no evidence to support the proposed benefits of instream structures in Middle Gooseberry Creek. Conversely, the evidence points to the mitigation causing as much damage as the project itself.

6.0 CLEAN WATER ACT, SECTION 404 COMPLIANCE

The DEIS identified on page 2-1, that one of the five alternative selection criteria was that "the project must comply with all statutory and regulatory requirements including Section 404 of the Clean Water Act". Statutory and regulatory requirements of the Clean Water Act encompass a vast body of statutes, Memorandum of Understanding, Regulatory Guidance Letters (RGL), legal decisions, and Executive Orders, all of which can not be summarized here. Four key statutory or regulatory requirements that specifically apply to the impact assessment and proposed mitigation developed for this project include the guidance given by the Sacramento District of the COE regarding minimum standards for delineation (October 4, 1994 and September 9, 1997), the 1990 Regulatory Guidance Letter on the expiration dates for wetland delineations (RGL 90-6), the 404(b)(1) guidelines (40 CFR. 230.1-230.80), and the 1989 *Memorandum of Understanding (MOA) between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines*.

6.1 Minimum Delineation Standards

Specific local COE District written instructions regarding delineation standards, in addition to the requirements listed in the 1987 COE delineation manual currently in use, have been developed twice since 1994 by the Sacramento District of the COE (October 4, 1994 and September 9, 1997 letters to all individuals involved in wetland delineation). In 1994, the Sacramento District developed a list of minimum requirements for wetland delineation that include completed and detailed data sheets, a delineation map and a narrative describing the wetlands and the justification for the boundary. The delineation map needs to accurately identify the entire project boundary, the different wetland types present, and typically be of a scale of 1 inch=100 to 200 feet (1"=400' being the maximum acceptable unless there are extenuating circumstances). Delineation maps using a photographic base

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must have been corrected for distortions. Additionally, delineations that inaccurately identify the entire project area of influence are unacceptable.

In 1997, this policy was updated to incorporate by reference and expand upon the previous guidance. This guidance stated that in addition to the previously identified minimum requirements, data sheets included with a valid delineation must include identification of dominant vegetation according to the "50/20" rule, a soil profile description horizon by horizon, and a description of hydrologic indicators. Data points for which data sheets are provided must be identified on the wetland delineation map and sufficient data points must be examined to ensure that the data sheets accurately characterize the wetland boundary.

In sum, the current minimum delineation requirements include the following:

- Accurate identification of the entire project area of influence.
- Data sheets with vegetation identified according to the 50/20 rule, soil profile and hydrologic indicator descriptions. A narrative justifying the wetland boundary location must be provided.
- The location of data points must be mapped on a delineation map with a scale less than 1"=400'; photobase maps must be corrected for distortion
- The wetland delineation map must accurately identify the location of the different wetland types present.

Status of compliance: WWS reviewed the 1988 wetlands delineation map which consisted of a single overlay on one enlarged 1985 aerial photograph, but the report detailing how the delineation was done was not available in time for this review. In 1988, wetlands were delineated only in portions of the Narrows Basin and there are an estimated additional 100 acres outside of the Narrows Basin subject to substantial (i.e., 30 to 100%) changes in hydrologic support. The DEIS also ignores impacts of ancillary project features (road relocation, recreational facilities, access roads, water pipelines) that include, at a minimum, 28 stream crossings. This violates the minimum delineation guidelines that state the entire project area of influence must be identified and examined for wetlands.

The Narrows Basin wetland delineation was apparently conducted by a private contractor for the BOR in the 1980's (exact date unknown) and is at least 10 years old. The mapping identified 140 acres of wetlands in the Basin, but did not include any of the silver sagebrush (*Artemisia cana*) community as being wetland. However, the silver sagebrush community is most pronounced near tributary junctions, shows up in nine mapped polygons as containing moist to wet soils often with small drainages (1985 infrared aerial photograph map base) and is apparently underlain by mollisols with aquic moisture regimes. As identified by Mt Nebo (1992), the community also is dominated by hydrophytic species. Both of the two dominant shrub species, silver sagebrush and shrubby

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cinquefoil (*Potentilla fruticosa*) occur in wetlands. Two of the five dominant herbaceous species, small wing sedge and silverweed (*Potentilla anserina*) are wetland indicator species. Silverweed is an obligate wetland species, meaning that 99 to 100% of the time it is found in wetlands. Data sheets and narrative reports justifying the wetland boundaries mapped in 1988 were not located by the BOR in time for review so the justification for excluding silver sage areas bisected by drainages is unknown.

6.2 Length of Time Jurisdictional Determinations Valid

Regulatory Guidance Letter 90-6 issued by the COE specified that jurisdictional delineations performed before 1990 were valid for only two years, with post-1990 delineations valid for three years from the date they were approved in writing. The RGL also stated that oral approval of delineations would cease to be valid. Exceptions would only be made for unusual circumstances. RGL 94-1 extended RGL 90-6 until December 31, 1999. Jurisdictional determinations made prior to 1994 would remain valid for three years but the COE could extend the three year period to five years, "unless new information warrants a new jurisdictional determination." Starting in 1994, new delineations would remain valid for five years.

Status of compliance—Wetlands within only a portion of the project area were delineated in 1988. It appears that there is no written statement by the COE in any of the BOR files regarding the delineation and no identification of extenuating circumstances that would allow an extension of the delineation acceptance past 1990. Thus it can only be assumed that the DEIS was released based upon an outdated delineation. Even if the COE extended the delineation from 1988 to 1998, new information regarding the project's area of influence and a discrepancy between the acreage delineated in 1988 and the acreage used in the DEIS mandates a reexamination of the delineation.

6.3 404(b)(1) Guidelines

Section 404(b) of the Clean Water Act requires that individual permits comply with the 404(b)(1) guidelines developed by the EPA (40 CFR 230.1-230.80). These guidelines require that a permit be issued only in the absence of practicable alternatives that would have a lesser impact and that a proposed project can not be defined so narrowly so as to eliminate other alternatives. The burden of proof is on the applicant as the presumption is that the project is not the least-damaging practicable alternative when special aquatic sites including wetlands, are affected. Although not part of the 404(b)(1) guidelines, 33 CFR 320.4.a.1 requires that water supply and conservation be considered in evaluating the effects of water projects.

There are a number of factual findings required under 40 CFR 230.11-.12 that are used to determine if the project would result in a "*significant degradation of the waters of the United States*" (230.10[c]). The Factual Findings require a determination of direct effect on all special aquatic sites including wetlands, vegetated shallows and riffle and pool complexes, as well as the downstream effects of the project on all waters of the US. The need to consider downstream effects of a dam through flow depletion was upheld in *Riverside Irrigation District v. Andrews*, 758 F.2d 508 (10th

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Cir. 1985) which identified that the COE needed "to consider all effects, direct and indirect, of the discharge for which authorization is sought".

Mitigation requirements are identified in 40 CFR 230.10(d) which specifies that mitigation plans must provide sufficient detail to ensure that the mitigation is capable of being implemented and will be effective in meeting goals once implemented. As a result of this clause, mitigation can be rejected if it relies too heavily on future analyses, unproven methods or methods in which success has been highly variable.

Status of compliance: Factual findings necessary to address the significant degradation clause of the 404(b)(1) guidelines have not been provided in the DEIS, particularly sections 230.11(b) which require a description of downstream flows and effects on special aquatic sites where there are changes in hydrologic regulation; 230.11(g) assessment of the cumulative project effects of both direct (fill, inundation) and indirect (changes in water quantity and quality) impacts; and 230.11(h) consideration of secondary effects associated with dams.

The lack of factual findings in the DEIS concerning changes in hydrologic regulation and downstream effects of dams demonstrates that the DEIS does not comply with the 404(b)(1) guidelines. More than 100 acres of wetlands, vegetated shallows and other waters of the US downstream of the proposed Narrows Dam would be subject to dramatic changes in hydrologic support (see sections 3.2, 3.3 and Table 1). Failure to address these impacts is a violation of 230.10(c). The DEIS also fails to address secondary effects associated with the Project in the Sanpete Valley that could adversely affect the spotted frog (see section 4.1.4, Valley Streams subheader).

The DEIS also rejects practicable alternatives that have much less impact on wetlands, such as Alternative C--Water Conservation Without Development of Other Water Supplies, because it doesn't meet one of the project purposes that of "developing Gooseberry Creek water". This violates the guidelines by defining the project so narrowly so as to exclude other alternatives. It also violates 33 CFR 320.4.a.1 which states that water supply and conservation must be considered in evaluating the effects of water projects.

The DEIS also improperly uses mitigation to justify the preferred alternative. If the preferred alternative really is the least damaging alternative, then mitigation can be used to compensate for unavoidable impacts. However, the DEIS uses mitigation to "buy down" the impacts of the preferred alternative in violation of section 230.10(d). It does this by not disclosing the huge impacts associated with flow depletions downstream of the proposed Narrows Dam. Instead it pretends that it will mitigate the impacts away. In fact, three practicable alternative were dismissed because of environmental impacts that the DEIS indicated would be greater than the mitigated preferred alternative. For example the Direct Diversion alternative was dismissed because it would impact 60 acres of wetlands and degrade Cottonwood Canyon for a net total of 60-80 acres of wetlands as compared to the mitigated preferred alternative of 100 acres of wetlands. However, the unmitigated preferred alternative has more than 200 acres of impacts and will also likely also degrade

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Cottonwood Canyon. Practicable alternatives with less than this amount of impact can not be dismissed according to the 404(b)(1) guidelines and mitigation can not be used to buy down the impacts of an alternative so that it will seem to have less impact than others.

The proposed mitigation plans in the DEIS are also are insufficient to assess success as is required by 40 CFR 230.10(d). The Middle Gooseberry Creek mitigation proposes a technique that has had variable success, is not suited for a meandering stream and would likely result in further stream degradation. Of the four mitigation sites proposed for the Narrows Basin, only one contains both suitable soils for wetlands and some ability to provide mitigation in the same watershed. There is insufficient detail in the mitigation plan to assess the ability of the site to replace the lost functions and values of the Narrows Basin.

6.4 1989 Mitigation MOA

The 1989 MOA between the COE and EPA regarding mitigation requirements under the Section 404(b)(1) guidelines identified a specific sequence in which mitigation must be approached. The first step is to identify the wetlands within the project area (both direct and indirect), then look at measures to avoid impacts. Wetland identification and impact avoidance is always the first step. For activities in which there remains unavoidable impacts, minimization of impacts must then be considered. Only then can project impacts be addressed through compensatory mitigation. The MOA emphasized that compensatory mitigation could not be used as a method to reduce the impacts of an alternative to allow its selection under the least environmentally damaging practicable alternative requirement of the 404(b)(1) guidelines (section 230.10[a]).

Status of compliance: The DEIS inappropriately uses mitigation to justify the preferred alternative in violation of the 1989 MOA sequencing requirements. See discussion above.

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*NARROWS PROJECT-REVIEW OF WETLAND, RIPARIAN AND
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Section 1

May 14, 1998

CARBON WATER COMMITTEE

P.O. Box 509
HELPER, UT 84526

MEMBERS

CARBON WATER
CONSERVANCY DISTRICT

PRICE CITY

HELPER CITY

WELLINGTON CITY

CARBON COUNTY
COMMISSION

PRICE RIVER
DISTRIBUTION SYSTEM

CARBON CANAL COMPANY

UTAH POWER

HAND DELIVERED

Mr. Michael A. Schwinn
Chief, Utah Regulatory Office
U.S. Army Corps of Engineers
1403 South 600 West, Suite A
Bountiful, Utah 84010

RE: Written Comments on: (1) the Application by the Sanpete Water Conservancy District for a Department of the Army permit under Section 404 of the Clean Water Act (Public Notice No. 199250255) (the "§ 404 Application"); and (2) the March 1998 Draft Environmental Impact Statement (the "DEIS") for the proposed Narrows Project.

Dear Mr. Schwinn:

51-54

The following comments on the § 404 Application and the DEIS for the proposed Narrows Project are submitted on behalf of the Carbon Water Committee. We appreciate the opportunity to submit these comments and request that the U.S. Army Corps of Engineers carefully consider these and the other public comments submitted on the § 404 Application and the DEIS.

The Carbon Water Committee represents a broad spectrum of governmental entities and agricultural, municipal, and industrial water users in Carbon County. The members of the Carbon Water Committee are the Carbon County Commission, Price City, Helper City, Wellington City, the Price River Water Improvement District, the Price River Distribution System, the Carbon Canal Company, Utah Power & Light Company, and the Carbon Water Conservancy District. However, the Carbon Water Conservancy District is not participating in the Committee's review of the § 404 Application and the DEIS or the preparation of the Committee's comments on the § 404 Application and the DEIS.

After careful review of the § 404 Application and the DEIS, we believe that the § 404 Application should be denied. The DEIS is fundamentally flawed and does not comply with the goals and requirements of the National Environmental Policy Act ("NEPA"), the Environmental Protection Agency's § 404(b)(1) guidelines, or current State of Utah and Bureau of Reclamation policy. Further, the Narrows Project is contrary to

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the public interest. For these reasons, as more completely described in our comments, the Carbon Water Committee urges the Army Corps of Engineers to deny the § 404 Application.

Pursuant to 33 C.F.R. § 327.4(b), the Carbon Water Committee hereby requests that a public hearing on the application for the 404 permit be held in Price, Utah. A public hearing is necessary to highlight the adverse impacts that the Narrows Project would have on the natural environment and the economy of Carbon County, and demonstrate that the Project is contrary to the public interest.

EXECUTIVE SUMMARY

The purpose of the National Environmental Policy Act, or NEPA, is to ensure that federal agencies make informed decisions concerning proposed projects with significant impacts on the natural and human environment. To that end, the statute, its implementing regulations, and numerous federal decisions on NEPA emphasize that before an agency can make an informed decision concerning a proposed project, the agency must first take a hard look at the project. It is clear that the DEIS fails to comply with this most fundamental requirement and thus violates NEPA and the § 404(b)(1) guidelines.

The DEIS is merely a repackaged version of the legally flawed Final EIS for the Project that was issued in January of 1995. The previous application for a § 404 Permit by the Sanpete Water Conservancy District (the "SWCD") relied on that Final EIS, which was followed by the Bureau's Record of Decision on the Project issued in May 1995. The Bureau rescinded the Record of Decision for the Final EIS in September 1995, then subsequently announced in February of 1996 that it would prepare a new EIS to "supersede the contractor-prepared Final EIS." (See 61 Fed. Reg. 4790 (Feb. 8, 1996). However, the Bureau merely adopted and repackaged the incomplete data and unsupported editorializing in favor of the Project found in the discredited, contractor prepared Final EIS.¹ Consequently, the comments that the Carbon Water Committee and other public and private entities submitted to the Corps in February and March of 1995 on the Final EIS and the SWCD's previous § 404 application, and in the scoping process on the new DEIS have largely been ignored.

The principal shortcomings of the DEIS are as follows. It mischaracterizes and fails to adequately document a need and purpose for the proposed Narrows Project. It fails to identify and analyze a range of practicable alternatives to the Project, including the most obvious alternative of water conservation. The DEIS also fails to conduct a cost / benefit analysis of the Project, even though the Bureau applied financial considerations to summarily reject the

¹ Even a cursory review of the Draft EIS reveals much that is identical to that in the rescinded Final EIS. This repackaging is particularly evident in Chapter 3, which is entitled "Affected Environment/Predicted Effects," and is a critical part of the document. However, except for being re-arranged under different headings and printed with a different font, much of the discussion in Chapter 3, even to the point of misspellings and typos, is identical to Chapter 3 in the Final EIS. Further, except for listing the "The Utah Water Data Book," a general pamphlet prepared by the Utah Division of Water Resources, the bibliography of the DEIS lists the same documents as the bibliography for the Final EIS, indicating that no new studies or investigations were conducted in connection with the DEIS.

identified alternatives to the Project that it purported to study. The DEIS is based on out-dated, incomplete data and it fails to adequately identify and analyze potential impacts of the Project. Specifically, the DEIS inaccurately estimates Project impacts on wetlands, stream flows, water quality, aquatic and reservoir fisheries, recreation, and agricultural, municipal, and industrial water use in the Price River system. It also fails to examine possible Project impacts on the endangered Colorado Squawfish, which is found in the Price River, and on other fisheries, riparian, and recreational resources of the lower Price River. The DEIS also fails to examine possible Project impacts on the Spotted Frog, which is found in Sanpete County and is the subject of the January 1998 interagency conservation agreement that was signed by, among others, the Bureau of Reclamation.

Further, the DEIS purports to determine the financial benefits of using Project water in Sanpete County without identifying the actual costs of the water to those persons using the water, or the adverse impacts caused by transferring this water out of the Price River system. The DEIS also proposes questionable mitigation measures, in probability of occurrence and effectiveness, in connection with the Project's acknowledged impacts on wetlands, stream and reservoir fisheries, recreation, water quality, and wildlife. Nor does the DEIS attempt to reconcile the Bureau's inconsistency in requiring an over \$2 million reconstruction on the foundation of Scofield Reservoir to withstand a 7.5 magnitude earthquake, while advocating construction of the Narrows Reservoir, approximately 17 miles away and closer to a potentially active fault, to withstand only a 5.5 magnitude earthquake. The DEIS ignores the obvious conflict between the Project and the policies of the Bureau that emphasize water conservation, protection of the environment, and integrated resource management on a watershed basis. The DEIS likewise ignores the obvious conflict between the Project and the policies of the State of Utah that emphasize water conservation and reducing the extremely high per capita consumption of water in the State.

In simple terms, the Project makes no sense. It is estimated to cost \$17.3 million of public funds, but it will not result in any new land being put into production. Instead, it will provide only supplemental irrigation water to reduce annual irrigation water shortages by approximately 11% in the Project area and allow some persons to harvest a third crop of alfalfa each year. In addition, the Project is a transbasin diversion that will move water from existing high-value beneficial uses, including support of wetlands and a high quality trout fishery, to supplemental irrigation, a low-value use. The Project would be environmentally destructive and would adversely impact agricultural, municipal, and industrial water users in the Price River system.

In making public interest determinations pursuant to the § 404(b)(1) guidelines, the Corps balances the benefits that are reasonably expected to accrue from the proposal against reasonably foreseeable detriments. See 33 C.F.R. § 320.4(a). The modest benefits of the Project are far outweighed by its fiscal, environmental, and socioeconomic costs. Consequently, the § 404 Application should be denied.

DISCUSSION

1. The DEIS fails to establish a need for the Narrows Project.

The federal regulations that implement the requirements of NEPA require an EIS to identify the need for the project that is under consideration and reasonable alternatives to the project. See 40 C.F.R. § 1502.13. Concerning this requirement, the Bureau of Reclamation's own handbook on implementing NEPA states in part:

This section [of the EIS] should briefly describe why the action is needed and what the action is designed to accomplish. It should provide a brief history leading to current conditions and anticipated future conditions. . . . Care must be taken to ensure an objective presentation and not a justification.

See United States Department of Interior, Bureau of Reclamation, National Environmental Policy Act Handbook § 4-9 (October 1990) (emphasis added). Further, in a letter, dated April 2, 1991, from Brooks Carter, Chief of the Utah Regulatory Office, to Mr. Richard M. Noble of Franson-Noble & Associates, Mr. Carter emphasized that the purpose and need for the proposed Narrows Project needed to be established for the Corps to conduct its review of the Project under the §404(b)(1) guidelines:

With respect to the proposed Narrows Project and anticipated wetland losses, the 404(b)(1) guidelines require an analysis of alternatives which would avoid impacts to wetlands. This analysis should also include a clear justification for the project.

(Emphasis added). A copy of the April 2, 1991 letter is attached to these comments as Exhibit "A." Contrary to the direction of the above-referenced CEQ regulations, the Bureau's guidance, and the Corps' explicit directive on this matter, the DEIS summary of the purpose and need for the Narrows Project is not an objective presentation, but rather a subjective justification for construction of the Project.

The DEIS fails to establish a need for additional agricultural water in northern Sanpete County.

In Section S.4 ("Summary of Project Purpose and Need") and Section 1.3 ("Purpose and Need"), the DEIS indicates that the purpose of the Project is to provide water for agricultural and municipal use in northern Sanpete County. Specifically, the purpose of the Project is to provide 4,920 acre-feet of water for the supplemental irrigation of 15,420 acres of land, and 480 acre-feet of water for lawn-watering in four towns in Sanpete County. In other words, the DEIS indicates that the purpose of the Project is to satisfy certain needs for agricultural and municipal water in northern Sanpete County. The DEIS also states that other purposes of the Project are to improve existing water conveyance facilities in Sanpete County and to meet a need for additional outdoor recreation facilities. However, the statements in the DEIS on the reasons for the Project are simply undocumented generalizations that do not establish a need for the Project.

The DEIS acknowledges that the bulk of the water that would be stored and diverted by the Project will be used to reduce late-season irrigation shortages of between 19 and 30 percent (averaging about 15,000 acre-feet per year) on land within the proposed delivery area for Project water. See DEIS at 1-9. However, the DEIS provides no documentation to establish that there is any need for supplemental irrigation or that the Project is a sensible way to meet such need. Consequently, the DEIS fails to establish that there is a need for agricultural water in northern Sanpete County.

As a threshold matter, to establish the existence of irrigation shortages that need to be reduced by the Project, the DEIS should have identified: (1) the specific lands that would be served by the Project which experience late-season shortages of irrigation water; (2) the water rights and water sources, and quantities of water under the rights and sources, that are used to provide irrigation water to these lands; (3) credible, up-to-date studies showing how much water is actually available under the water rights and water sources each year; (4) the irrigation practices, and their relative efficiencies, used on the specific lands; (5) credible, up-to-date studies documenting irrigation shortages on the identified lands; (6) the findings of these studies; and (7) the negative consequences (i.e., social and economic costs) of the shortages.

However, no such information is provided in the DEIS. It does state that there are over 23,000 acres in the Project area and, based on soil, drainage, and topographic conditions, 15,420 of the 23,000 acres are eligible to receive Project water. See DEIS at 1-9. However, the DEIS does not identify the location of the 15,420 acres.² Nor does it identify the water rights and sources of water used on such lands and/or summarize any credible studies concerning the claimed irrigation shortages on the 15,420 acres that would receive Project water, or the negative impacts of the shortages. The only reference to any study in this Section of the DEIS is in the last paragraph of Section 1.3.2, which alludes to “25 of 33 years studied” but fails to provide any more information. See DEIS at 1-9. This paucity of information makes it impossible to determine whether there are annual irrigation shortages in the area that would receive water under the Project and, if such shortages exist, whether they have such a negative effect as to justify expending over \$17 million of public funds to reduce such shortages.

Consequently, the DEIS fails to comply with one of the threshold requirements of NEPA and the Bureau’s own guidance with respect to analyzing whether there is even a need for the Project.

The DEIS fails to establish a need for additional municipal water in northern Sanpete County.

The DEIS indicates that that the Project would serve a need for municipal water in northern Sanpete County by initially providing 480 acre-feet of water per year for lawn-watering in the towns of Fairview, Mount Pleasant, Spring City, and Moroni. See DEIS at S-4. However,

² Since the DEIS indicates that 15,420 of the 23,000 acres are eligible to receive Project water, based on soil, drainage, and topographic conditions, the specific location of the 15,420 acres should be identified in the DEIS.

the DEIS fails to provide or summarize credible data to establish that there is a need for such water, or that the Project is a sensible mechanism to meet these needs. This discussion in the DEIS contains a little more information than in its claims of late-season shortages of irrigation water in the unidentified Project area. However, the information presented is simply not relevant to the issue of whether additional water for lawn-watering is needed in the four identified towns. Further, although individual homeowners may choose to use culinary water to irrigate their lawns, it is not proper to characterize a perceived need for water for individual lawn-watering as a need for municipal water.

Section 1.3.1 ("Additional Municipal Water Supply") of DEIS contains a number of charts and graphs summarizing certain per capita uses of culinary and secondary water use. Specifically, Figure 1-1 shows the per capita culinary water use per day in 1990 in the United States and in the western states, including Utah, in 1990. Further, Tables 1-1 and 1-2 (undated) show per capita culinary and secondary water use along the Wasatch Front. These charts are interesting, but contain no information on municipal water use in Sanpete County. Further, these charts contain no information on the municipal water that the DEIS states is used for lawn-watering in Fairview, Mount Pleasant, Spring City, and Moroni. Instead, the DEIS bases this purported need for municipal water on its earlier, undocumented contention that irrigation water shortages exist in the Project area.

The DEIS should have provided information to show whether there is a need for water for lawn watering in each these towns. Specifically, it should have contained information that identifies: (1) the water rights or sources of water used by each of the 4 towns; (2) the total quantity of water that is available to each of the 4 towns under its water rights and sources of water; (3) the amount of each town's available supply that is used for indoor use; (4) the amount of each town's available supply that individual homeowners use for irrigation of their lawns; (5) how the water that individual homeowners use to water their lawns is applied to the lawns, i.e., flood irrigation or sprinkler systems; (6) the need in each of the 4 towns for additional water for outdoor, lawn-watering use; (7) the impacts (i.e., social and economic costs) of the need for additional for lawn-watering; and (8) whether the current and future projected needs for water for lawn irrigation could be met through pricing strategies, restricting or alternating lawn-watering, using sprinkler systems, and using certain landscaping practices such as xeriscaping. Finally, the DEIS should have evaluated the identified present and projected future needs in connection with the State of Utah's stated policy of reducing the extremely high per capita consumption of water by 25% by 2050. See Utah Division of Water Resources, The Utah Water Data Book 8 (December 1997).

The DEIS provides no such information and/or analysis. Further, its above-referenced discussion of Mt. Pleasant's irrigation system is far too general to establish a current need for additional water supplies for lawn-watering in the 4 towns, or a future need for municipal water in those towns. Among other things, it assumes that each town's municipal water use is identical to the others. Thus, the DEIS fails to identify water rights and sources of water for each town, the water delivery system used by each town, what portion of each town's supply of water is used for indoor and outdoor purposes, and what type of actual demand exists for this use of water. Finally, it is not appropriate to characterize a perceived need for water for lawn-watering

as a need for municipal water. Consequently, this discussion in the DEIS fails to show a need for another purported purpose of the Project and, consequently, fails to comply NEPA and the Bureau's own guidance.

The DEIS fails to establish that there is a need for additional recreational facilities.

The DEIS indicates that a third purpose of the Project would be to satisfy a need for improved and additional recreation and fishery opportunities in Sanpete County. However, the DEIS fails to specify and document these needs or identify why the Project would be the best means of meeting these needs. Instead, the DEIS merely speaks in generalities on this subject. For example, it states that "the demand for recreation is increasing rapidly in the project area" and quotes the following language from the 1992 State Comprehensive Outdoor Recreation Plan (SCORP):

As Utah's population continues to grow, so does the demand for recreation facilities and opportunities. Obviously, the recreation system in place in 1970 or even 1980 is no longer adequate in the 1990s.

See DEIS at 1-12. The DEIS also refers to a statement in the 1986 Land and Resource Management Plan for the Manti-LaSal National Forest that demand for recreational sites is expected to triple over the next 50 years. However, other than providing general statements such these, the DEIS fails to identify any studies or plans identifying current recreational uses and/or needs in Sanpete County, or establish that these needs would only be satisfied by the construction of a dam and reservoir like proposed Narrows Project. Consequently, the DEIS discussion of the recreation needs to be met by the Narrows Project is included as just another justification for the Project, not an objective presentation, and it fails to comply with the requirements of NEPA.

The DEIS estimates of current and future demands for water for municipal uses reveals that the true purpose of the Narrows Project is to allow the Sanpete Water Conservancy District (the "SWCD") to obtain public funds to essentially purchase water for future municipal purposes at low-cost irrigation water rates. The Project would provide 480 acre-feet of municipal water, barely 17% of the projected future municipal shortages. See DEIS at 1-9, 2-5. The DEIS expressly acknowledges that water developed by the Project will be increasingly used for municipal purposes in the future. See DEIS Table 2-1, footnote 1 at 2-5. Thus, the DEIS anticipates that the objective of reducing late-season irrigation shortages will be sacrificed to meet increasing municipal demand.

Use of the irrigation need to finance municipal water development is inconsistent with the SRPA. The DEIS states that the SWCD plans to obtain 65% of the estimated Project costs of \$17.3 million from funds under the Small Reclamation Projects Act of 1956 ("SRPA"), as amended. See DEIS at 2-24. When first enacted, the SRPA provided funding only for irrigation projects, but has been amended to allow multipurpose projects so long as commercial irrigation is one of the purposes of the project. Stated another way:

Loans cannot be made [under SRPA] solely for a municipal water project even if most of the water will be used for irrigation of lawns and gardens. Such use is not considered to be irrigation within the intent of this Act.

See United States Department of Interior, Bureau of Reclamation, Loans Under the Small Reclamation Projects Act of 1956 at 3 (September 1988). Further, under SRPA, the irrigation component of a project receives a no-interest loan, while other components must pay interest on the amounts loaned for such components. The interest rate on non-irrigation components, such as water for municipal use, is based on the market yield interest rate on certain long-term federal government obligations that have a similar term to the respective loan repayment period. Consequently, by portraying the principal purpose of the Project to be the provision of supplemental irrigation water, the DEIS facilitates funding the bulk of Project costs through a no-interest loan when in fact the Project water is ultimately intended for municipal uses. It is inappropriate for the Project to be advocated for one purpose when ultimately intended for another.

Another reason for the recitation in the DEIS concerning the municipal water and recreational facilities needs that will be satisfied by the Narrows Project is suggested by language in the three sentence Section B.3 ("Costs and Financing") in the DEIS. This is the only section in the DEIS that discusses the estimated costs of the Narrows Project. It indicates that 65% of the estimated Project costs of approximately \$17.3 million will be financed under the SRPA (\$11,245,000) and that the remaining 35% of the total costs (\$ 6,055,000) "includes costs already incurred by the [Sanpete Water Conservancy District] and funding provided by the State of Utah." See DEIS at 2-24.

As a matter of clarification, no money at this time has been appropriated for the Project under the SRPA. Further, no money has been earmarked for or provided by the State of Utah for the Narrows Project. The State rarely has the financial resources to provide funding for irrigation components of Bureau-related projects. However, state funds might be available to provide funding for other water uses, including water developed in conjunction with recreational facilities and for municipal purposes. Consequently, the municipal water and recreational facilities components of the Narrows Project appear to be added to the Project more for the purpose of acquiring funding than for fulfilling actual current needs.

Conclusion.

The Army Corps of Engineers will not issue a § 404 permit for a project that is contrary to the public interest. See 33 C.F.R. § 320.4(a)(1). As its regulations indicate, its public interest review requires examining a wide range of factors:

Evaluation of the probable impact which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments.

Id. Further, a component of the public interest review is “[t]he relative extent of the public and private need for the proposed structure or work.” 33 C.F.R. § 320.4(a)(2)(1). The DEIS does not adequately demonstrate a “public and private need” for the Narrows Project. Consequently, the Narrows Project is not in the public interest.

2. **The DEIS violates NEPA by failing to analyze reasonable alternatives to the Project and inadequately discussing the alternatives it purports to have studied. The DEIS also violates the “practicable alternatives” requirement of the § 404(b)(1) guidelines.**

The goal of NEPA is to ensure that federal agencies make informed decisions concerning proposed projects with significant impacts on the natural and human environment. Before an agency can make an informed decision concerning a proposed project, the agency must first take a hard look at the project. A crucial aspect of this hard look is the analysis of reasonable alternatives. This requirement is also emphasized by the federal regulations that implement NEPA. For example, 40 C.F.R. § 1502.14 states that the analysis of reasonable alternatives “is the heart of the environmental impact statement,” and that agencies must “[r]igorously explore and objectively evaluate all reasonable alternatives” to a proposed project. See § 1502.14(a).

The DEIS fails to seriously consider a range of reasonable alternatives to the proposed Narrows Project and thus violates NEPA. This fundamental flaw demonstrates that the Bureau has not taken a “hard look” at the Project and cannot make the informed decision on the Project that is required by NEPA. This failure also violates the threshold requirement in the § 404(b)(1) guidelines that an applicant for a § 404 permit adequately consider practicable alternatives to the proposed project. Since this threshold requirement has not been satisfied, the § 404 Application should be denied.

Under EPA’s § 404(b)(1) guidelines:

[N]o discharge of dredged or fill material should be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

40 C.F.R. § 230.10(a) Further, the § 404(b)(1) guidelines provide that an alternative is practicable if:

it is available and capable of being done taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could be reasonably obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered.

See 40 C.F.R. § 230.10.(a)(2); see also 40 C.F.R. § 230.3(q) (defining “practicable”).

The DEIS indicates that the principal purpose of the Narrows Project is to reduce annual irrigation water shortages in northern Sanpete County. This would be accomplished by providing 4,920 acre-feet per year for the supplemental irrigation of 15,420 acres (approximately 4" per acre). Consequently, the threshold question in reviewing the § 404 Application is whether the applicant has adequately considered practicable alternatives to the Narrows Project that might provide an equivalent quantity of water with less adverse impacts on aquatic ecosystems. Clearly, the § 404 Application and the DEIS on which it relies cannot satisfy this basic requirement.

As a threshold matter, the selection criteria identified in the DEIS for determining what alternatives to the proposed Project should be studied demonstrates that the alternatives analysis in the DEIS is a sham and nothing more than a justification of the proposed Project. Specifically, the selection criteria are as follows:

1. The project must include irrigation water supply as a project purpose and provide expected project benefits for at least the duration of the loan repayment period.
2. The project must provide additional water supply to north San Pete County at the time of season when it is needed.
3. The project must comply with all statutory and regulatory requirements and guidelines including section 404 of the Clean Water Act and the Endangered Species Act.
4. The project must be financially feasible.
 - loan repayment must use 100% of the irrigation amortization capacity and be repaid within 40 years or less;
 - loan factor for the project must be 0.5 or less (SRPA does not require proof of economic feasibility, *i.e.*, a benefit - cost analysis);
5. The project must divert and store water under a legal claim of right and priority in full compliance with state law.

See DEIS at 2-1. This selection criteria do not focus on ways to meet the purported purposes and needs of the Project. Rather, they artificially constrain possible alternatives by requiring, among other things, that every alternative must be financially feasible under Small Reclamation Project Act standards (which the DEIS is quick to note does not require proof of economic feasibility). The selection criteria also require that an alternative "must divert and store water under a legal claim of right." See DEIS at 2-1. These are not relevant and objective criteria. They demonstrate that the Bureau has abandoned any objectivity that it may have had at one time concerning the Project and has simply adopted the views of the Sanpete Water Conservancy District that

because it has unused water rights in the Gooseberry Creek drainage that it feels entitled to use in a dam and reservoir project, it is the Bureau's duty to ensure that such a project is built.

The DEIS acknowledges that it only studied 3 alternatives in any detail — the proposed Project, a smaller version of the Project, and the no-action alternative. See DEIS at S-3 to S-4. The DEIS also acknowledges that it briefly considered then rejected 10 “nonviable” alternatives. Consequently, the DEIS actually examines only two alternatives in any detail, and the only difference between these involves the size of the reservoir that would be constructed.

The discussion in the DEIS concerning the reasonable alternatives that it summarily rejected demonstrates how its inclusion in its selection criteria of the requirement that an alternative project “must divert and store water under a legal claim of right” allowed the Bureau to easily reject these alternatives and rationalize analyzing only the large reservoir and small reservoir options in any detail. For example, in discussing the Mammoth Damsite Alternative and the Valley Damsite Alternative, the DEIS rejected these alternatives based on this water right criteria. Specifically, the DEIS indicated:

Conditions set forth in the 1984 Compromise Agreement and the approved water right dictate site location and storage capacity of the project reservoir. If those conditions are not met, water-rights relative to the project would be forfeited.

See DEIS at 2-47, 2-49. However, the existence of a contract concerning water rights owned by the proponent of a project or between persons that may be affected by a proposed project has no bearing on the plain legal requirement that reasonable alternatives must be studied in an EIS. The Council on Environmental Quality (“CEQ”), which adopted the federal regulations implementing NEPA, has emphasized that “reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.” (Emphasis added). Interpreting this mandate, the CEQ has plainly stated that reasonable alternatives which are outside the legal jurisdiction of the lead agency must be analyzed in an EIS. See Council on Environmental Quality, Questions and Answers about the NEPA Regulations No. 2b (March 16, 1981). See also § 1502.14(c) (the EIS must “include reasonable alternatives not within the jurisdiction of the lead agency.”).

Likewise, an applicant for a 404 permit cannot avoid considering practicable alternatives to a proposed project simply because the applicant might not have water rights for each alternative at the time it is studied. It is possible that after studying an alternative to a proposed project, the applicant might reasonably conclude that the cost of obtaining water rights for the alternative is so high that the alternative is not practicable under the 40 C.F.R. §230.10.(a)(2) standard. However, this conclusion must follow an objective analysis, and cannot be a presumption that is used as an excuse for not studying a particular alternative. Consequently, the existence of the 1984 Agreement or any other agreements relative to water use does not excuse the failure to adequately consider practicable alternatives to the Project.

The Corps itself has consistently emphasized this specific point in letters from Brooks Carter, the then Chief of the Utah Regulatory Office to Richard M. Noble, of Franson-Noble & Associates, Inc. (the preparers of the previous Draft EIS, Final EIS, and 1995 § 404 Application) dated October 7, 1992, and July 21, 1994. The Corps also emphasized this point in a letter dated December 30, 1997 from Michael Schwinn, the current Chief of the Utah Regulatory Office, to Kerry Schwartz, of the Bureau, concerning the Corps' review of the Preliminary DEIS. Specifically, the October 7, 1992 letter to Mr. Noble states in part:

We have completed our review of the Narrows Draft Environmental Assessment Report (DEAR) and the Draft Small Reclamation Loan Application Report (DSRLAR).

Only two alternatives are presented for consideration: Alternative A (the no action alternative) and Alternative C (the proposed plan). Other alternatives have been dismissed on the basis such alternatives would involve a breach of contract as per the 1984 Compromise Agreement. Our decision to issue or deny a permit will be based on the effect of the project upon the aquatic ecosystem, whether or not the project is in the public interest and an analysis of practicable alternatives. A range of alternatives, therefore, becomes critical in that decision making process. We cannot accept an alternatives analysis that is so narrowly defined by the 1984 compromise Agreement as to preclude consideration of other, less damaging practicable alternatives nor to allow our decisions to be prejudiced by such an agreement.

The documents, in our opinion, too quickly dismiss water conservation and efficiency improvements. Approximately 40 percent of the project area is still under flood irrigation and serviced by open ditches and canals. There is obviously considerable room for additional water savings that have not been quantified. Indeed, the documents state that receipt of project water would be contingent upon additional water conservation measures being implemented. We see no reason such measures cannot be addressed and the water savings quantified as an alternative.

(Emphasis added). The July 21, 1994 letter to Mr. Noble is consistent with the above and provides in part:

Reference is made to your letter dated June 30, 1994 in which you asked whether or not the Narrows Draft Environmental Impact Statement contained the information necessary for the Corps to conduct its own 404 (b)(1) Guidelines analysis.

After a second review of the DEIS, we have concluded that the document only partially addresses the information necessary for the Corps § 404 (b)(1) analysis. The major flaw of the DEIS is in the development and analysis of the alternatives. The DEIS unreasonably restricts the scope of alternatives to that which was

identified in the 1984 Compromise Agreement. It is the Corp's responsibility under the Guidelines to consider all practicable alternatives that address the basic and overall purpose and need of the project as it is determined by the Corps. As stated in earlier correspondence (see our letter dated October 7, 1992), the Corps cannot restrict its own alternatives analysis to so narrow a field as that given by the 1984 Compromise Agreement.

(Emphasis in letter). This position is also expressed in a letter dated July 20, 1994 from Mr. Carter to Robert D. Williams of the U.S. Fish & Wildlife Service that provides in part:

We have completed our review of the Draft Coordination Act Report for the Draft Environmental Impact Statement for the Narrows Project. It would be premature at this time for the Corps to comment on the adequacy of the mitigation either proposed by the proponent or recommended by the Service and the Utah Division of Wildlife Resources; the presumption being that the preferred alternative and the impacts identified in the DEIS are a given. Furthermore, we are not prepared at this point to accept the project proponent's overall purpose and need of the project nor will we restrict ourselves to so narrow a range of alternatives as the proponent's reliance on the 1984 Compromise Agreement would dictate.

Finally, the December 30, 1997 letter from Mr. Michael Schwinn to Mr. Kerry Schwartz of the Bureau stated in part:

Converting the remainder of north Sanpete County to sprinkler irrigation and replacing open ditches and canals with pipelines is estimated to save approximately 8,000 acre feet per year. To understand what this means in reducing the shortage, it should be compared to the Proposed Action and the smaller reservoir alternative, i.e., the proposed plan will reduce shortages from 30 percent to approximately 19 percent of the time. What will the shortage be reduced to with conservation measures.

On page 2-52 it states that one reason this alternative was not considered further is because irrigation supplies would still be inadequate. However, we note that irrigation supplies under the proposed plan are still inadequate. It becomes a matter of degree to which the shortages are reduced and we are not prepared to concur that conservation measures alone are not a practicable alternative.

Copies of the October 7, 1992, July 21, 1994, July 20, 1994, and December 30, 1997 letters are attached to these comments as Exhibit "B," Exhibit "C," Exhibit "D," and Exhibit "E" respectively.

Further, the above-quoted statement from the DEIS that "If those conditions [in the 1984 Agreement concerning use of the water rights covered by the Agreement] are not met, water-rights relative to the project would be forfeited" is wrong. Under Utah law, all or a portion of a perfected water right may be subject to forfeiture if it is not used for five successive years. See Utah Code Ann. § 73-1-4. The water rights that the SWCD would like to use in the Project are

not perfected water rights. Rather, they are approved change applications. Consequently, these water rights are not subject to forfeiture under Utah law. Further, it appears there are no Utah statutes or decisions providing for the forfeiture of any kind of a water right, perfected or unperfected, simply because the use differs from that described in an agreement. Finally, it appears that under the change application process administered by the Utah State Engineer's Office, it would be possible to change the point of diversion, place of use, and/or nature of use of the SWCD's water rights.

In sum, the existence of the 1984 Agreement does not excuse the failure to study practicable alternatives to the Project, and the cursory rejection of these alternatives on the basis that they would involve a use of water that is different than discussed under the 1984 Agreement violates the 404(b)(1) guidelines, as well as the NEPA requirement that an EIS consider reasonable alternatives to a proposed project.

The DEIS failed to adequately analyze conservation measures as a reasonable alternative to the Project.

As noted earlier in this discussion, the range of alternatives to be identified and analyzed under NEPA depends on the nature of the proposal. See Council on Environmental Quality, Questions and Answers about the NEPA Regulations No. 1b (March 16, 1981). The DEIS indicates that the primary purpose of the Project is to reduce annual irrigation shortages on presently irrigated lands in northern Sanpete County. Thus, to satisfy NEPA, the DEIS should have identified and adequately considered alternatives to the Narrows Project that would satisfy that purpose. Its failure to do so is exemplified by its dismissal of conservation of existing water supplies as an alternative to the Project. Implementation of conservation measures that could likely decrease present shortages by reducing the quantities of water that are wasted each year in irrigation practices is likely a less damaging, practicable alternative to the Narrows Project that warrants a full, detailed evaluation. Consequently, the possibility of a range of water conservation measures as a practicable alternative to the Project warranted a detail, careful evaluation, rather than a cursory one page discussion and rejection in the DEIS.

The DEIS indicates that 60 to 75 percent of the irrigated land within the area that would be served by the Project currently use some form of water conservation. It also acknowledges that implementation of only a few conservation measures relative to this water use would save almost twice the quantity of irrigation water that would be delivered if the Project were built. Specifically, the DEIS states:

Using estimates of present levels of efficiency which are based on existing conveyance facilities and on-farm irrigation systems, there is an average annual shortage of about 15,000 acre-feet of irrigation water. It is estimated that placing the remainder of canals and ditches in pipelines and converting the remainder of the on-farm systems to sprinkler irrigation would conserve about 8,000 acre-feet of water per year.

See DEIS at 2-46 (emphasis added).³ The DEIS then fails to analyze this seeming practicable alternative to determine whether it is “capable of being done taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 40 C.F.R. § 230.10(a)(2). Instead, the DEIS rejects the conservation alternative because it would not completely eliminate the average annual irrigation water shortages in the area. It states:

[A]fter conservation measures have been implemented to the maximum extent possible, there would still be a shortage of about 19 percent or 7,000 acre-feet per year and a need for the 4,920 acre-feet of irrigation water that would be developed by the project.

See DEIS at 2-31. In other words, the DEIS rejected the conservation alternative because it would not completely eliminate these irrigation shortages in the Project area. However, this rejection appears inconsistent with the statement on page 2-4 of the DEIS that:

The Project water is needed to reduce irrigation water shortfall on lands within the project area. These shortages average more than 15,000 acre feet per year on irrigated lands eligible to receive project water. All of the project’s irrigation supply, about 4,920 acre feet of water, would be used on 15,420 acres of land to supplement existing irrigation water. This supply, coupled with water conservation measures, would reduce average irrigation shortages to about six percent, or 2,200 acre-feet per year. Average shortages of about five percent are considered optimal for irrigation projects.

See DEIS at 2-4 (emphasis added). In other words, the DEIS statement that some amount of average shortages “are considered optimal for irrigation projects,” conflicts with its assertion that conservation of existing supplies was rejected as a reasonable alternative to the Project because it would not completely eliminate water shortages. Otherwise, the DEIS should have also rejected the proposed Project, since it too would not completely eliminate these irrigation shortages.

Assuming for discussion that the above estimates from page 2-31 of the DEIS are accurate, the fact that conservation measures alone would not eliminate annual irrigation water shortages in the Project area is no reason to so quickly reject this alternative. After all, the Narrows Project is intended to provide 4,920 acre-feet of supplemental irrigation water to apply to late-season water shortages, but is not intended to completely eliminate these shortages. Consequently, the DEIS should have analyzed whether the conservation alternative was reasonable in light of the costs of implementing conservation measures, existing technology, logistics, and the overall purpose of the Narrows Project. Since conservation measures: (1) would likely cost far less than the estimated \$17.3 million of public funds required to construct the Narrows Project; (2) could be implemented using accepted basic technology; (3) would save

³ This estimate is based on savings that could be realized by conservation in the Project area, which comprises less than 10% of the irrigated cropland in Sanpete County. See Table 3-22 at 3-75. The DEIS makes no effort to determine if implementing conservation measures on other lands could provide additional water that would reduce the shortages identified in the DEIS for the Project area.

almost twice as much water as the Project would provide; and (4) would not adversely impact the natural environment as the Narrows Project certainly will, implementation of these measures appears to be a practicable alternative deserving of detailed study and consideration in the DEIS.

The failure of the DEIS to adequately study the possible alternative of conservation measures makes no sense, particularly in light of the present emphasis by the Bureau on the importance of water conservation in every water management program. For example, in its Strategic Plan dated June 1992, the Bureau states that conservation is a guiding principle in managing and developing water resources: "Water conservation is a key element in improving the use and management of the Nation's water resources to more effectively meet present and future needs." See Reclamation's Strategic Plan 5 (June 1992). Further, the Blueprint for Reform: The Commissioner's Plan for Reinventing Reclamation (November 1, 1993), states that the Bureau will emphasize "conservation and improvements in the efficiency of use of already developed water" and that "promoting conservation will be given priority in our program activities." See Blueprint 1, 2. These Bureau policies are embodied in current water conservation guidelines issued by the Bureau in December 1996. See Reclamation Policy for Administering Water Conservation Plans Pursuant to Statutory and Contractual Requirements (December 10, 1996).

The failure of the DEIS to adequately study the possible alternative of conservation measures also runs counter to the following long-standing policy of the State of Utah encouraging conservation of existing supplies:

The state supports and promotes the conservation and wise use of all water for all beneficial purposes. Water conservation will be given proper and careful consideration in feasibility investigations at all levels and for all projects. It will be examined as both a supplement and an alternative to project proposals. Sponsors for irrigation projects are encouraged to prepare a conservation plan approved by the local soil conservation district. Sponsors for culinary projects are encouraged to design a conservation plan to be approved by the presiding official of the community or district to be served by the project. All project sponsors will be advised to seek assistance from appropriate individuals or organizations to help develop the conservation plan and implement applicable conservation practices and programs for their water projects.

See State of Utah Department of Natural Resources, Division of Water Resources, Utah State Water Plan at 17-1 (January 1990) (quoting 1982 policy of Utah Division of Water Resources) (emphasis added). Further, in the recently issued publication entitled "The Utah Water Data Book," the Utah Division of Water Resources states:

The Division of Water Resources believes that water conservation measures can reduce water demand in Utah by as much as 25 percent between the years 1995 and 2050.

Utah Division of Water Resources, The Utah Water Data Book 8 (December 1997). Further, in its list of recommendations to meet water demands of the 21st century, the Division states:

Water conservation should play an important role in meeting Utah's future water demands. Stretching existing water supplies is less expensive and the right thing to do. Water suppliers should implement a strong water conservation program to make their already developed supplies go further.

Id. at 13. Finally, in 1998, the Utah Legislature passed H.B. 418, which enacts a new provision of the Utah Code (§ 73-10-32) to require water conservancy districts and other water retailers to develop water conservation plans concerning water that is used for domestic and culinary use. Specifically, § 73-10-32 requires all water conservancy districts to prepare and adopt, or update if one has already been adopted, a water conservation plan "to help conserve water, and limit and reduce its per capita consumption so that adequate supplies of water are available for future needs." The statute identifies a number of practices to consider in a water conservation plan, including use of water efficient systems, residential and commercial landscapes that require less water to maintain, water reuse systems, and water rate structures designed to encourage more efficient use of water.

In light of the above-referenced policies of both the Bureau and the State of Utah emphasizing the importance of water conservation, the failure of the DEIS to perform any credible analysis of the possibility of water conservation being a reasonable, or practicable, alternative to the Project is illogical and further emphasizes the lack of objectivity in the document. Another indication of the bias for the proposed Project in the DEIS is the terse, additional ground given for rejecting the conservation alternative because it: "Doesn't develop Gooseberry Creek water in accordance with purpose and need of project." See DEIS at 2-47. This reinforces that the Bureau's purpose in the DEIS is to ensure that the Sanpete Water Conservancy District can develop its water rights, rather than objectively evaluate reasonable alternatives in reducing the purported water shortages in northern Sanpete County.

The failure of the DEIS to study implementation of conservation measures as a reasonable alternative to the Project under NEPA, and/or as a practicable alternative under the 404(b)(1) guidelines, also runs counter to the Sanpete Water Conservancy District's repeated commitments to implementation of conservation practices. Specifically, in response to a request made by legal counsel for the Carbon Water Committee, pursuant to the Utah Government Records Access Management Act, for a copy of the policy referred to in the DEIS statement that "SWCD has adopted a policy that would require all recipients to implement conservation practices in order to be eligible for project water," see DEIS at Appendix F ("Environmental Commitments") ¶ 15, SWCD's legal counsel responded as follows:⁴

⁴ SWCD's legal counsel did not provide a copy of the requested policy. Consequently, it appears that the DEIS statement that that "SWCD has adopted a policy that would require all recipients to implement conservation practices in order to be eligible for project water," is misleading.

SWCD's conservation policy is based on the requirements of the Small Reclamation Projects Act and, in particular, the requirements of Section 210(b) of the Reclamation Reform Act of 1982. Under the act's express requirements, any water sales contracts will require that irrigators implement conservation measures and improve the overall efficiency of their irrigation systems to be eligible to receive project water.

SWCD has already implemented extensive water conservation measures and those measures will continue. SWCD is well aware of the conservation requirements mandated by the Bureau of Reclamation under the RRA and has adopted and repeatedly committed to these requirements in numerous public and interdisciplinary team meetings.

Consequently, to be consistent with the above-referenced "extensive conservation measures" that SWCD's legal counsel indicate have been already implemented, the DEIS should have discussed the specific conservation measures that Sanpete has already adopted and the additional measures it has considered or is planning to implement.

Further, in light of the statement of SWCD's legal counsel that its conservation policy "is based the Small Reclamation Projects Act and, in particular, the requirements of Section 210(b) of the Reclamation Reform Act of 1982," the DEIS should have identified the measures that the Bureau has recommended be included in water conservation plans developed pursuant to the Reclamation Reform Act of 1982, and examined whether implementation of some or all of these measures by the SWCD would effectively reduce or eliminate the water shortages that the DEIS indicates the Project is intended to reduce.

Specifically, in December 1996, the Bureau issued Reclamation Policy for Administering Water Conservation Plans Pursuant to Statutory and Contractual Requirements, which discusses the water conservation plans that all water districts are encouraged to adopt pursuant to the Reclamation Reform Act of 1982. In this document, the Bureau recommended that the following elements be included in every water district's conservation plan:

- (1) Description of the district;
- (2) Inventory of water resources;
- (3) Water management problems, opportunities, and goals;
- (4) Existing water conservation measures;
- (5) Fundamental water conservation measures;
- (6) Additional water conservation measures;
- (7) Selected measures and projected results;
- (8) Environmental review;

(9) Implementation schedule and budget;

Further, the document recommends that the following additional factors to be considered in developing water conservation plans involving the use of water for agricultural purposes and the use of water for municipal and domestic purposes:

Agricultural Water Conservation Measures

- A. On-Farm Program Incentives – Facilitate and/or provide financial incentives and assistance for on-farm water use efficiency improvements (e.g., lease, low interest loans, or water charge rebates for on-farm conservation measures).
- B. Drought/Water Shortage Contingency Plan – Develop a drought/water shortage contingency plan for the district that outlines policies and procedures for operation and allocation during water supply shortages.
- C. Water Transfers – Facilitate voluntary water transfers that do not unreasonably affect the district, the environment, or third parties.
- D. Conjunctive Use – Where appropriate, increase conjunctive use of surface and groundwater within the district, and work with appropriate entities to develop a groundwater management plan.
- E. Land Management – Facilitate potential alternative uses for lands with exceptionally high water duties, or whose irrigation contributes to significant problems (e.g., drainage that precludes attainment of water quality standards).
- F. Operational Practices and Procedures – Evaluate potential district operational policy and institutional changes that could allow more flexibility in water delivery and carry-over storage.
- G. Distribution System Scheduling – Implement a program of distribution system scheduling based on area-wide crop demand modeling or advanced ordering requirements.
- H. On-Farm Irrigation Scheduling – Facilitate the delivery of crop water use and on-farm water delivery information to district customers for on-farm irrigation scheduling.
- I. Pump Efficiency Evaluations – Coordinate the evaluation of district and private pumps with local utilities, evaluating both energy and water efficiency.
- J. Distribution Control – Modify distribution facilities and controls to increase the flexibility of water deliveries (e.g., automate canal structures, institute variable turn off times, etc.).

K. Reuse Systems – Construct district operational spill reuse systems.

L. Reduction of Conveyance Losses – Line distribution ditches and canals or convert to pipe.

M. Construction, Lining or Covering of Regulatory Reservoirs. Construct, line, or cover small regulatory reservoirs within the distribution system.

Municipal and Industrial Water Conservation Measures

A. Residential and Governmental Audit and Incentive Programs – Provide interior and exterior water audits and incentive programs for single-family residential, multi-family residential, and governmental/institutional customers.

B. Commercial and Industrial Audit and Incentive Programs – Conduct commercial and industrial water conservation audits, water use reviews, and incentive programs.

C. Landscape Programs – Provide landscape water conservation audit and incentive programs for new and existing customers.

D. Distribution System Audit Program – Conduct distribution system water audits, leak detection, and repair at regular intervals.

E. A Drought/Water Shortage Contingency Plan – Develop a drought/water shortage contingency plan for the district that outlines policies and procedures for operation and allocation during water supply shortages.

F. Wastewater Reclamation and Recycling Programs – Design and implement wastewater reclamation and recycling programs.

G. Plumbing Regulations. Enforce applicable Federal, State, and local requirements for the sale and installation of water-efficient plumbing products.

H. Fixture Replacement Programs – Implement programs to retrofit low consumption toilets and/or high efficiency showerheads in existing buildings.

I. Conjunctive Use – Where appropriate, increase conjunctive use of surface and groundwater within the district, and work with appropriate entities to develop a groundwater management plan.

The DEIS failed to examine whether any or a combination of the above conservation measures might be an effective means to reduce or eliminate the agricultural and municipal water shortages that the DEIS claims require the Project to be built. This failure underscores the Bureau's

inability to take a hard look at the proposed Project and reasonable alternatives to the Project. It further demonstrates that the DEIS fails to comply with the requirements of the § 404(b)(1) guidelines and the requirements of NEPA.

The § 404(b)(1) guidelines state that “no discharge of dredged or fill material should be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem.” See 40 C.F.R. § 230.10(a). Conservation measures are a practicable alternative to the Narrows Project. Consequently, the application for the 404 permit for the Project must be rejected.

There are reasonable and potentially practicable alternatives to the Project, in addition to conservation measures.

There are a number of reasonable and potentially practicable alternatives to the Project, in addition to conservation measures that might provide additional water supplies for northern Sanpete County, that were summarily rejected in the DEIS. These alternatives include: the use of presently undeveloped water in northern Sanpete County, the use of water from the Central Utah Project or use of funds pursuant to Sections 206 and/or 207 of the Central Utah Project Completion Act, the retirement of some irrigated acreage in Sanpete County, not growing a third crop of hay each year on certain land in Sanpete County, and combining conservation measures with retiring irrigated land and not growing a third crop of hay each year.

The DEIS failed to adequately study the development of existing groundwater as a reasonable alternative to the Project.

The DEIS should have fully analyzed whether existing and presently undeveloped ground water in Sanpete County can be developed to supply the need for supplemental irrigation water. According to a USGS study, Sanpete County has ample undeveloped ground water supplies. See U.S. Geological Survey (Department of Interior) Ground-Water Hydrology of the San Pitch River Drainage Basin, Sanpete County, Utah, Geological Survey Water-Supply Paper 1896 (1971). Consequently, this alternative to the proposed Narrows Project should have been fully considered. However, the DEIS spent less than one-page in dismissing this possibility. As justification for this quick rejection, it offers a quote, without documentation, from an appropriation policy of the Utah State Engineer indicating that he considers the ground water in north Sanpete County to be fully appropriated. See DEIS at 2-51.

The DEIS failed to adequately study use of water from the Central Utah Project or funding pursuant to Sections 206 and/or 207 of the Central Utah Project Completion Act as a reasonable alternative to the Project.

Another alternative considered “nonviable” in the DEIS was the use of water from the Central Utah Project (“CUP”) to supply the needs of Sanpete County. The DEIS states that the Central Utah Water Conservancy District (“CUWCD”) has dropped all plans to deliver CUP water to Sanpete County. This raises the question of why Sanpete County would remain in the CUWCD and continue to pay taxes to the CUWCD to fund completion of a project that will not deliver water to Sanpete County. If Sanpete County withdrew from the CUWCD, it could be

reimbursed pursuant to § 206 of the Central Utah Project Completion Act for ad valorem taxes previously paid to the CUWCD and use this money to enhance its existing supplies. See Pub. L. No. 102-575, § 206 (1992). Further, rather than seeking funding under the Small Reclamation Projects Act and the State of Utah for the Narrows Project, the Sanpete Water Conservancy District could seek funding under § 207 of the CUP Completion Act for the above referenced conservation measures that the DEIS indicates would produce almost twice the amount of supplemental irrigation water supplied by the Project.

The DEIS failed to adequately study the possible retirement of irrigated land as a reasonable alternative to the Project.

Another possible alternative to the proposed Project that the DEIS failed to adequately consider was ceasing agricultural production on certain lands in the Project area to reduce late-season irrigation shortages. The discussion in the DEIS on this alternative comprised only one paragraph and is as follows:

The retirement of irrigated lands is one means to reducing overall water demands but is not considered to be a conservation measure. A considerable amount of irrigated acreage would need to be retired to balance the agricultural demand with available supplies. Since the economy of Sanpete County is primarily agricultural, retirement of the required acreage would have significant economic impacts and is opposed by the Utah Department of Agriculture. Further, this alternative does not meet the purpose and needs of the project described in Chapter 1.

See DEIS at 2-53. The DEIS then provided two bullet points stating that this alternative was eliminated from consideration because it “would not meet the funding requirements of the SRPA [Small Reclamation Projects Act]” and “would not provide additional water supplies to north Sanpete County at the time the water is needed.” Id. However, the DEIS included no data or analysis to support any of these conclusory statements.

As a preliminary matter, the DEIS statement that the retirement-of-irrigated-acreage alternative was eliminated from consideration because it “would not meet the funding requirements of the SRPA” indicates the Bureau illogically believes that the purpose of the Project and any reasonable alternative must be for the Sanpete Water Conservancy District to obtain funding under the Small Reclamation Projects Act. In such case, the Bureau has plainly lost sight of the fact that there is no need for the SWCD to receive this subsidy if there are other reasonable means for reducing the demand for late-season deliveries of irrigation water. Further, the Bureau appears to have missed the point that no additional water supplies are needed if the demand for supplemental irrigation water is reduced.

The DEIS indicated that retirement of irrigated acreage was rejected as a reasonable alternative because “a considerable amount of irrigated acreage would need to be retired to balance the agricultural demand with available supplies.” However, data supplied elsewhere in the DEIS undermines this claim. For example, the DEIS discussion on the need to reduce late-season shortages of irrigation water indicates that, under existing supplies of water, 1.94 acre-feet

of water are currently available for each of the 15,420 acres in the project area that would be eligible to receive project water. See DEIS at 1-9. Consequently, the need for the 4,920 acre-feet of water that would be provided each year by the Project for supplemental irrigation use could be eliminated by retiring 2,536 acres of currently irrigated land ($4,920 \div 1.94 = 2,536$). That acreage represents a little more than 10% of the 23,000 acre Project area, or 16.4 % of the 15,420 acres of land in the Project identified in the DEIS to receive supplemental irrigation supplies under the Project. Further, the retirement of some agricultural lands would appear to reduce early-season water demands and thus free up existing water supplies for late-season use.

The DEIS also rejected this alternative because of the purported “significant economic impacts” of retiring such lands. However, the DEIS failed to provide any analysis to support its claim that the retirement of a portion of the irrigated land in the Project area would have “significant economic impacts.” The DEIS also indicated that the retirement of irrigated acreage is “opposed by the Utah Department of Agriculture,” but likewise provided no data or documentation in support of this claim. In any event, opposition to an alternative that is practical and feasible from a technical and economic perspective is not a basis under NEPA for failing to evaluate the alternative.

The excuses given in the DEIS for not studying the retirement of certain irrigable lands in the proposed Project area are no more than unsupported conclusions that fail to comply with the requirements of NEPA and point to the need for the preparation of a new, DEIS by an entity that can perform the objective analysis required under NEPA.

The DEIS failed to study not growing a third crop of hay each year as a reasonable alternative to the Project.

The DEIS indicates that the Project would divert and store water that could be used to reduce late-season shortages of irrigation water. Stated another way, the purpose of the Project is to grow a third crop of hay on certain lands. Consequently, another reasonable alternative to the Project that the DEIS should have studied is not growing a third crop of hay on the lands that are slated to receive Project water. The DEIS should have assessed whether not growing a third crop of hay on certain lands was a reasonable way to eliminate or reduce the demand for late-season supplemental irrigation water. Further, the DEIS should have compared the impacts of not growing a third crop of hay on less than 10% of the irrigated land in northern Sanpete County with the impacts of constructing and operating the Project. Such analysis would likely have identified the annual on-farm income in the Project area from hay and alfalfa crops, determined the value of the late-season crops each season in the area, and then determined the benefits derived from late-season crops as compared against the economic and environmental costs of the Project. However, the DEIS failed to study this obvious alternative.

The DEIS failed to study combining conservation measures, retirement of irrigated land and/or not growing a third crop of hay each year as a reasonable alternative to the Project.

Another reasonable alternative to the Project that should have been studied in the DEIS was the possible combination of conservation measures, retirement of irrigated lands, and/

incentives to farmers in the Project area to not grow a third crop of hay each year. This alternative appears to be a sensible, low-cost, economically efficient way to reduce late-season irrigation shortages without the acknowledged environmental impacts of the Project.

The failure of the DEIS to analyze reasonable alternatives to the Project is particularly egregious in light of a recent study by the U.S. Geological Survey (“USGS”) indicating that dam and reservoir construction is invariably accompanied by high environmental costs. Specifically, the USGS publication, Dams and Rivers, provides an excellent discussion of the downstream effects of dams and the relative merits and resource tradeoffs that should be considered in assessing possible dam projects. See U.S. Geological Survey, Dams and Rivers Circular No.1126 (June 1996). In the publication, the USGS examines a number of dam and reservoir projects in the western United States and concludes that these projects have had significant downstream impacts on, among other things, fisheries, water quality, and recreation. Consequently, the DEIS should not have so quickly restricted its alternatives analysis to a large reservoir and a smaller version reservoir project.

In sum, each of the “nonviable” alternatives purportedly studied in the DEIS is dismissed based on conclusory statements that afford the reader and the Army Corps of Engineers no substantive information on which to compare the alternative with the proposed action. Further, the DEIS failed to study obvious reasonable alternatives to the Project such as the retirement of some irrigable lands in the Project area, or the combination of conservation measures, retirement of lands, and providing incentives to not grow late-season crops. These failures are critical flaws in the DEIS that violate NEPA and the § 404(b)(1) guidelines, merit denial of the § 404 Application, and require preparation of a new DEIS.

3. The § 404 Application and the DEIS fail to adequately identify the wetlands that would be impacted by the Narrows Project and the functions and values of such wetlands, and propose questionable mitigation measures.

The discussion in the § 404 Application and the DEIS on the wetlands that would be impacted by the Narrows Project is fundamentally flawed and does not comply with the requirements of the § 404(b)(1) guidelines or NEPA. As a threshold matter, the DEIS unlawfully restricts the geographical scope of its wetlands analysis. It then relies on an invalid wetlands delineation, using outdated methodology, to identify only those wetlands that would be flooded by the Narrows Reservoir. However, there are additional wetlands in the Narrows Basin that clearly would be impacted by ancillary construction and subsequent recreational and other uses in that area. Further, there are wetlands along Middle and Lower Gooseberry Creek, and Cottonwood Creek, and in the Sanpete Valley, including the 28 drainages that would be crossed by pipelines used to convey Project water to regulating ponds for eventual delivery that are simply ignored by the DEIS. The DEIS assessment is so flawed and incomplete that the only remedy is for a new, thorough wetlands analysis to be completed.

Having failed to identify all of the wetlands that would be impacted by the Project, the DEIS compounds these errors by failing to identify the functions and values of the wetlands in the Narrows Basin it states will be flooded by the Narrows Reservoir. This makes it impossible

to assess whether the mitigation measures suggested in the DEIS would actually mitigate the harms to wetlands caused by the Narrows Project.

The DEIS illegally restricts the scope of its assessment of what wetlands would be impacted by the Project.

The wetlands assessment in the DEIS is fundamentally flawed from the start because it only discusses impacts to those wetlands in the so-called Narrows Basin that would be flooded by construction and operation of the Narrows Reservoir. The DEIS acknowledges wetlands other than those that would be flooded by the Reservoir would be affected by the Project. See DEIS at 3-56. Nonetheless, it does not attempt to identify such wetlands, or identify their functions and values. The DEIS rationalizes this failure to assess as follows:

The Narrows Reservoir basin was identified as being the area that would be most significantly impacted by the proposed project. For this reason, the basin was studied in greater detail than the other areas associated with the project.

See DEIS at 3-56. However, there is nothing in the regulations implementing NEPA or in the § 404(b)(1) guidelines that allow the preparer of an EIS or § 404 application to fail to identify the potential impacts to wetlands in one part of a project simply because the “most significant impact” of the project will occur in another location. Consequently, the DEIS is legally inadequate from the start because it fails to identify all of wetlands that would be impacted by the Narrows Project.

The DEIS relies on an expired wetlands delineation to identify wetlands within the reservoir basin (the “Narrows Basin”) of the Narrows Project that would be affected by construction of the Narrows Reservoir.

A threshold step in analyzing what wetlands might be impacted by a proposed project is to identify those wetlands. To that end, the U.S. Army Corps of Engineers has adopted and updated regulations and policies specifying and refining the current procedures that must be followed in delineating wetlands. It is obvious that the DEIS does not comply with these requirements.

The DEIS fails to even identify the standards and methodology used in identifying wetlands in the Narrows Basin that would be flooded by the Narrows Reservoir. Instead, it simply indicates that “a wetlands delineation for the reservoir was completed following the procedures outlined in the COE manual.” See DEIS at 3-50. No more information concerning this wetlands delineation is provided in the DEIS. Further, the Bureau was not able to locate the delineation documents until three weeks after being requested to do so by Western Wetland Systems, who reviewed portions of the DEIS and documents used by the Bureau in its DEIS preparation on behalf of the Carbon Water Committee. The Bureau’s inability to timely locate such critical information underscores its lack of oversight and independence in the preparation, review, and release of the DEIS. This inability also violates 40 C.F.R. § 1502.18(d), which provides that material which is used in the preparation of an EIS must be circulated with the EIS

“or be readily available on request,” and Bureau policy. See United States Department of Interior, Bureau of Reclamation, National Environmental Policy Act Handbook § 4-17 (October 1990) (acknowledging requirements of 40 C.F.R. § 1502.18); see also Council on Environmental Quality, Questions and Answers about the NEPA Regulations No. 25b (March 16, 1981) (“Care must be taken in all cases to ensure that material incorporated by reference and the occasional appendix that does not accompany the EIS, are in fact available for the full minimum public comment period”).

Although the Bureau could not timely locate the actual wetlands delineation referred to on page 3-50 of the DEIS, it appears that, in approximately 1988, a private contractor performed a wetlands delineation for only the area that would be flooded by the Narrows Reservoir. In such case, the delineation is no longer valid. As more particularly described on page 33 of the Western Wetland Systems report submitted with these comments,⁵ under the Army Corps of Engineer’s Regulatory Guidance Letters 90-6 and 94-1, a jurisdictional delineation is valid for a limited period of time, not exceeding 5 years. The delineation for the Narrows Basin was completed approximately 10 years ago. Consequently, it is invalid. Further, the entire DEIS wetlands discussion, which relies on the invalid delineation, is also invalid. The only remedy for this critical flaw is for a new, thorough jurisdictional delineation to be completed in accordance with current COE policies on the data, content, mapping, etc., that must be included in a wetlands delineation.

The DEIS and the § 404 Application statements that 100 acres of wetlands will be flooded by the Narrows Reservoir is inconsistent with a 1992 study identifying approximately 140 acres of wetlands in the Narrows Basin.

The DEIS states that there are approximately 100 acres of wetlands in the Narrows Basin will be flooded by the Narrows Reservoir. See DEIS at 3-53. However, as discussed on page 7 of the Western Wetland Systems report submitted with these comments, a 1992 study by Mt. Nebo, which was in the Bureau’s files on the Project, identified approximately 140 acres of wetlands in the Narrows Basin. Consequently, the DEIS discussion on wetlands in the Narrows Basin that will be impacted by the Narrows Reservoir is premised on a significant quantitative error that undermines and renders inaccurate the entire DEIS discussion.

The DEIS did not adequately assess impacts to the wetlands that it indicated would be flooded by the Narrows Reservoir because it did not adequately identify the functions and values of these wetlands.

After wetlands are identified that may be impacted by a proposed project, the next step is to determine whether and, if so, how they will be impacted by the project. Then, the functions and values of the wetlands that will be impacted must be determined. The DEIS made an inadequate functions and values determination. This error further multiplies the mistakes made in

⁵ The Western Wetland Systems report, entitled “Review of the Narrows Draft EIS – Wetland, Riparian and Related Resource Impacts,” is attached to these comments as Exhibit “H.”

the DEIS and makes it impossible for the DEIS to adequately identify the actual impacts to the wetlands in the Narrows Basin that would be flooded by the Narrows Reservoir.

The DEIS relies on the so-called Habitat Evaluation Procedure ("HEP") in purporting to identify the functions and values of the wetlands that would be flooded by the Narrows Reservoir. It rationalizes the use of HEP as follows: "Because the primary function of wetlands is wildlife habitat, the procedure known as HEP was used to evaluate the wetland species." See DEIS at 3-50. That is the extent of the function and values discussion in the DEIS. However, as more fully discussed on page 26 of the Western Wetland Systems Report submitted with these comments, the use of HEP has several shortcomings with respect to assessing impacts to the Narrows Basin wetlands. First, the DEIS use of HEP conflicts with 33 C.F.R. § 320.4[b] of the COE's regulations, which indicate that wetland functions include fish and wildlife habitat, maintenance of groundwater supplies, water purification, and flood prevention.

The DEIS reliance on HEP also conflicts with findings of the National Research Council in 1995 that the use of the HEP procedure is not appropriate for assessing wetlands functions because HEP is too narrowly focused on fish and wildlife. Perhaps even more important, the DEIS use of HEP ignores a study in the Bureau's files on the Project stating that the highest functions and values of the Narrows Basin wetlands are for sediment stabilization, sediment retention, nutrient transformation, flood flow alteration, ground water discharge, production export to aquatic systems, aquatic life/diversity, general wildlife diversity and abundance, and wildlife breeding habitat. In this study only 2 of the 10 identified functions and values involved wildlife. See Western Wetland Systems at 26-27. Therefore, by focusing only on wildlife values, the DEIS fails to account for the Project's obvious impacts on a number of critical functions and values performed by the wetlands that will be flooded by the Narrows Reservoir.

The DEIS fails to identify wetlands in the vicinity of the Narrows Basin that would be affected by development and recreation in connection with the Narrows Reservoir.

The DEIS improperly focused on only those wetlands in the Narrows Basin that would be flooded by the Narrows Reservoir in assessing impacts to wetlands in that vicinity. It is obvious that activities in connection with construction of the Narrows Dam and Reservoir would impact wetlands in addition to those that will be flooded by the filling of the Reservoir. However, the DEIS fails to identify the wetlands that would be affected by these activities.

The DEIS also claims that the Narrows Reservoir will become an important recreational facility, and indicates that new campgrounds, boat docks and facilities, shoreline fishing, other dispersed recreation, and construction of cabins and other private and public facilities will accompany this recreational use of the area. However, the DEIS makes no attempt to identify wetlands in the Narrows Basin that would be impacted by these uses of the area. This failure violates NEPA.

The DEIS fails to identify wetlands and aquatic resources outside the Narrows Basin that would be affected by the Narrows Project.

There are a number of locations outside of the Narrows Basin that the DEIS acknowledges would be directly impacted by the Project, and appear to include wetlands but were not discussed in the DEIS. There can be no justification for the failure of the DEIS to identify wetlands outside of the Narrows Basin in areas that the DEIS acknowledges will be directly impacted by the Project. These areas, along Middle and Lower Gooseberry Creek, Gooseberry Reservoir, and Cottonwood Creek, are more fully discussed in the Western Wetland Systems report submitted with these comments.

The DEIS recognizes that the relocation of SR-264 will impact over 700 acres. Specifically, the DEIS states that "construction of the Narrows Project and its associated recreation facilities would cause the loss of 237 acres of "Roaded Natural Appearing" dispersed recreation on National Forest lands and 466 acres on private lands." See DEIS at 3-63. However, there is no attempt in the DEIS to determine what portion of this 700+ acres consists of wetlands, and no attempt to explain the failure to conduct such a determination.

The DEIS states that there will be approximately 46,400 visitor days of new recreational use in the area of the Project, and indicates that direct impacts from the Project will occur in areas 8 to 10 miles in all directions from the Reservoir:

This growth in recreational use would be a direct effect of the project and would require more intensive management in the area surrounding it (approximately the area 8-10 miles in each direction). Significant increase in facilities to support and manage for this increase would be needed.

...

The amount of dispersed use within 8-10 miles of the reservoir is already at a level considered to be crowded during holidays and big game hunting seasons. The additional attraction of the new flat-water fishery in this area is expected to increase dispersed use to a point that the FS [U.S. Forest Service] would need to place restrictions on areas available for this type of use.

Along with increased dispersed use in the area, nearby developed recreation facilities will be impacted. Gooseberry Campground and the Lower Gooseberry Reservoir units are immediately adjacent to the proposed reservoir, as is the Scenic Byway and snowmobile parking area. Skyline Drive, Flat Canyon Campground, and the limited facilities at Beaver Dam and Boulger Reservoirs are also within reasonably close proximity.

See DEIS at 3-63 (emphasis added). Since the DEIS concedes that the Project would have direct and significant impacts on areas land use over 8 to 10 miles in each direction of the Reservoir, its

failure to identify wetlands, riparian areas, and other waters of the United States in these areas and assess impacts to these resources violates the § 404(b)(1) guidelines and NEPA.

Among other areas, the reduction of flows in the middle 3 miles of Gooseberry Creek by 90% will plainly affect riparian and wetland areas. Further, the DEIS indicates that the Narrows Project will cause reductions in the amount of water stored in Scofield Reservoir, causing approximately 250 acres of shallow water areas to be converted into barren mudflats. This effect, and the loss of vegetated wetlands associated with this conversion should also have been discussed in the DEIS. However, the DEIS ignores the Project's downstream impacts on these resources.

As more fully discussed on pages 6-11 of the Western Wetland Systems report submitted with these comments, there are wetlands downstream from the Project along Middle Gooseberry Creek, Gooseberry Reservoir, Lower Gooseberry Creek, Cottonwood Creek, and Fish Creek that clearly would be impacted by the Project. Among other things, increased flows of 100% to 300% in Cottonwood Creek during the irrigation season will occur and are expected to widen the stream channel, erode the stream banks, and also adversely impact jurisdictional waters of the United States. The sediment generated by the scouring of Cottonwood Creek each year at the beginning of the irrigation season also will likely affect downstream streams and wetlands. However, the DEIS ignores the downstream effects of the Project on all of these resources.

Further, the § 404 Application for the Project acknowledges that construction of the Upper Cottonwood Creek pipeline will "disturb" 160 square feet of wetlands and that the discharge structure at the end of the pipeline "will result in a permanent impact to the riparian area near Cottonwood Creek." See § 404 Application at 3. As a preliminary matter, it is not clear whether the discharge structure already exists or needs a § 404 permit to be constructed. This information should be provided. In any event, the size of the wetlands disturbed by the discharge structure is not stated.

The DEIS and the § 404 Application indicate that after Project water is released into Cottonwood Creek, it will be diverted into two pipelines totaling 16 miles in length; the East Bench Pipeline (2.5 miles long) and the Oak Creek Pipeline (13.5 miles long). Both the EIS and the § 404 Application state that the East Bench Pipeline and the Oak Creek Pipeline will cross a total of 28 drainages along the east side of the Sanpete Valley. However, neither document provides any details concerning where the pipelines will cross the 28 drainages or the size and types of wetlands impacted in each crossing. Consequently, both documents fail to specify the location and size of the wetlands that will be impacted by construction of the 16 miles of pipeline, and fail to identify the functions and values of these wetlands.

The § 404 Application also indicates that 12 regulating ponds will be constructed to receive water through laterals from the East Bench and Oak Creek pipelines, and water will then be delivered to "water subscribers." However, the Application does not identify the location of the 12 regulating ponds or whether construction of these ponds would impact wetlands. The Application also fails to describe the types of facilities that would be used to deliver water, whether such facilities already exist or need to be constructed, and whether there are wetlands

that would be impacted by the construction and/or use of these water delivery facilities. This is critical information, yet the DEIS and the § 404 Application simply ignore these issues.

Since these wetlands in the Sanpete Valley are not even identified in the DEIS, the potential impacts on these wetlands, among others, are not discussed in the DEIS. Clearly, construction of the discharge structure in Cottonwood Creek, the East Bench Pipeline, the Oak Creek Pipeline, the 28 stream crossings that must be made in constructing the two pipelines, the 12 regulating ponds and laterals to those ponds, and the water conveyance facilities that are actually used to deliver Project water are integral parts of the Narrows Project. Consequently, to comply with NEPA and the § 404(b)(1) guidelines, the DEIS must fully discuss the location of all of the above, and the identified the wetlands potentially impacted by construction and operation of these facilities. The failure of the DEIS to include this critical information plainly violates NEPA. It also violates the 404(b)(1) guidelines which require that projects must not be segmented for analysis purposes, and that the downstream impacts of a project cannot be ignored.

4. The § 404 Application and the DEIS fails to adequately discuss the measures that may be taken to mitigate impacts to those wetlands identified in the DEIS as being adversely affected by the Narrows Project.

The discussion in the § 404 Application and in the DEIS of measures that might be taken to mitigate the Project's impacts on wetlands is incomplete and fundamentally flawed at the outset by its failure to identify all of the wetlands that would be impacted by the Project and its failure to determine the functions and values of the 100 acres of wetlands that it acknowledged would be flooded by the Narrows Reservoir. Consequently, no mitigation measures are proposed for the Project's acknowledged impacts on jurisdictional waters or wetlands outside of the Reservoir basin.

The DEIS discussion of the four proposed mitigation measures reveals that the Bureau has failed to follow the three-step sequencing relative to mitigation that is required under current policy as indicated by the 1990 Memorandum of Agreement between U.S. Army Corps of Engineers ("COE") and the U.S. Environmental Protection Agency ("EPA") on this subject. The DEIS discussion also reveals that the proposed mitigation is being used to, in effect, "buy-down" the obvious impacts of the Narrows Project, which the DEIS clearly advocates as the preferred alternative. This is improper and violates NEPA and the 404(b)(1) guidelines.

Under the 404(b)(1) guidelines, mitigation plans must provide sufficient detail to ensure that proposed mitigation is capable of being implemented. Under NEPA, an EIS must address the probability of the mitigation being implemented. See Council on Environmental Quality, Questions and Answers about the NEPA Regulations No. 19b (March 16, 1981) ("to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed"). Nonetheless, the DEIS fails to address the probability of the proposed mitigation being implemented.

The DEIS fails to discuss the costs of three of the four mitigation measures proposed, and identifies only a portion of the costs associated with one proposed mitigation measure. The failure to identify and discuss the costs of the proposed mitigation measures has the effect of masking the true costs of the Project. It also violates the policy of the State of Utah that "mitigation of adverse environmental impacts should be considered as part of any project and should be reflected in project construction, operation, and maintenance costs." See Utah State Water Plan at 14-4.

For these reasons, and as more particularly discussed in these comments and the Western Wetland System report submitted with these comments, the DEIS discussion of possible mitigation measures is legally inadequate and does not comply with the requirements of NEPA or the § 404(b)(1) guidelines.

Background: the four mitigation measures proposed in the DEIS.

The DEIS and the § 404 Application propose the following four measures to mitigate impacts to the 100 acres of wetlands that both documents state will be flooded by the Narrows Reservoir:

- (1) purchase of private land adjacent to Mud Creek (upstream of Scofield Reservoir) followed by enhancement of degraded wetlands on this land;
- (2) purchase of private land to the west of Lower Gooseberry Reservoir followed by creation of wetlands on this land;
- (3) release water from Fairview Lakes and the Narrows Reservoir onto land adjacent to the Narrows Reservoir to create new wetlands
- (4) manage return flows from Project water to create wetlands near the Manti Meadows Waterfowl Management Area.

For the reasons summarized below and more fully discussed on pages 28-31 of the Western Wetland System's report submitted with these comments, there are significant problems with each of the four proposed mitigation measures. Further, no measure or combination of these measures would adequately compensate for the flooding of 100 acres of wetlands by the Narrows Reservoir, or the Project's impacts on other wetlands that the DEIS failed to identify.

The DEIS discussion of the four sites it proposes for possible mitigation of the Project's adverse impact on wetlands in the Narrows Basin is confusing and inconsistent.

As a threshold matter, the DEIS is confusing and inconsistent in its discussion of the respective sizes of the four sites it proposes for possible mitigation of the Project's flooding of wetlands in the Narrows Basin. Specifically:

- (1) Page 2-19 states that the first site, private land adjacent to Mud Creek, is 220 acres in size. However, page 2-34 states that this site is 160 acres in size.
- (2) Page 2-19 states that the second site, private land to the west of Lower Gooseberry Reservoir, is 120 acres in size. However, page 2-34 states that this site is 86 acres in size.
- (3) Page 2-19 states that the third site is land adjacent to the proposed Narrows Reservoir that might be used to create up to 100 acres of new wetlands. In contrast, page 2-34 states that up to 72 acres of wetlands might be created in this area.
- (4) Page 2-10 states that the fourth site would involve the creation of up to 100 acres of wetlands at the Manti Meadows Waterfowl Management Area. In contrast, page 2-34 indicates that up to 72 acres of new wetlands may be created.

Page 3-54 of the DEIS also discusses the four possible mitigation measures, but fails to provide acreages for 2 of the 4 sites. However, in contrast to the statements on pages 2-19 and 2-34 indicating that there is no priority of alternatives, page 3-54 states that restoring and creating wetlands next to Mud Creek is the proposed mitigation, with the other sites being alternative mitigation. In addition, the descriptions of the mitigation that would be undertaken on the four proposed sites is different in each of the three portions of the DEIS, and in the § 404 Application.

The above-referenced internal inconsistencies in the DEIS and between the DEIS and the § 404 Application make it very difficult to understand just what mitigation is being proposed, as well as the costs of the proposed measures. These textual inconsistencies also underscore the Bureau's lack of oversight throughout the NEPA process, and lack of commitment to objectively analyzing the Project and preparing a readable, coherent DEIS. It plainly should not be the responsibility of the reader of the DEIS to sift through conflicting information to discern what the proposed mitigation is before beginning to analyze whether it might be effective.

The proposed mitigation measures do not follow the sequencing required under EPA and COE policy.

As a threshold matter, the discussion of proposed mitigation in the DEIS fails to follow current COE and EPA policy on mitigation, which is summarized in the Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines (effective Feb. 7, 1990) [hereinafter Mitigation MOA]. Specifically, the Mitigation MOA provides that mitigation should involve the three step sequence of: (1) avoiding the impact to wetlands; (2) modifying the project to minimize unavoidable impacts; and (3) compensating for unavoidable impacts that occur after all practicable project modifications have been accomplished. The Corps itself has emphasized this specific point in a letter dated July 30, 1991 from Brooks Carter, Chief of the Utah Regulatory Office to Mr. Patrick Collins of Mt. Nebo

Scientific. The letter responds to Mr. Collins' request for information on the Corps' mitigation policy and states in part:

The sequence of events; avoidance, minimization and mitigation, may only be interrupted under the following circumstances: the discharge is necessary to avoid environmental harm, or the discharge is expected to result in an environmental gain or insignificant environmental loss. In other words, one may not proceed directly to compensatory mitigation without adequately demonstrating that a practicable alternative to developing in a wetland does not exist.

A copy of the July 30, 1991 letter is attached to these comments as Exhibit "F." In contrast, the DEIS never mentions whether avoidance or minimizing unavoidable impacts to wetlands was ever considered. Further, the DEIS plainly did not demonstrate that a practicable alternative to developing in a wetland did not exist.

The proposed mitigation fails to take into account wetland values and functions.

Contrary to the requirements of the Mitigation MOA, the DEIS assumes that compensatory mitigation is the only appropriate mitigation step for the Narrows Project. The goal of compensatory mitigation, however, is to replace lost wetland functions or values, not just to replace wetlands acre for acre. The Mitigation MOA specifically provides that mitigation for wetlands losses "should provide, at a minimum, one for one functional replacement (i.e. no net loss of values), with an adequate margin of safety to reflect the expected degree of success associated with the mitigation plan." Mitigation MOA at 5 (emphasis added). Therefore, even if compensatory mitigation is appropriate in this case, and there is every reason in this case to assume that it is not appropriate, the four proposed measures are so vague that it is not possible to determine whether they satisfy the standards for compensatory mitigation outlined in the Mitigation MOA.

It is doubtful that the first proposed mitigation measure, purchasing private land adjacent to Mud Creek to enhance degraded wetlands and create new wetlands, would be able to be implemented and, even if implemented, it would not compensate for the functions and values of the flooded wetlands in the Narrows Basin.

Under one of the proposed mitigation measures, approximately 160 to 220 acres of private land (depending on which section of the DEIS is read) adjacent to Mud Creek would be purchased. The DEIS describes this as a former wetland that has been severely damaged by cattle grazing and indicates that after the land was purchased, cattle would be removed from the land, the land would be fenced to prevent their return, and the degraded wetland would naturally restore itself. The DEIS also indicates that some stream channel work would be performed to create additional wetlands adjacent to the stream, and some earth work to create swales and berms might be necessary to create cells of new wetlands. The DEIS indicates that water for these wetlands would be provided from Mud Creek or from small springs that exist in the area.

As a preliminary matter, it is doubtful that the SWCD can obtain the Mud Creek property that the DEIS proposes as the first mitigation site. The owner of this property has indicated that he does not want to sell the property. Under the Utah Water Conservancy District Act, the SWCD is granted the authority to purchase real property within or without its boundaries. Further, under the Act, the SWCD is also granted certain powers to condemn real property. However, there is no language in the Act or in any Utah case law indicating that a water conservancy district has the authority to condemn real property located outside of its boundaries. Consequently, it appears that the SWCD is without authority to acquire the Mud Creek property unless its current owner, who indicates that he does not want to sell the property, changes his mind. As a result, even if the proposed mitigation at the Mud Creek site could be implemented, it appears that the property is not available for such purposes.

Another flaw in the proposed mitigation concerning the Mud Creek site is the assumption in the DEIS that there is water in Mud Creek and in nearby springs that is available to be used on the property for wetland purposes. However, under Utah law, before water may be diverted and used for a particular purpose, an approved water right for the intended diversion and use must be obtained through the Utah Division of Water Rights. The DEIS did not identify any water rights that the SWCD has that would allow it to divert water from Mud Creek and nearby springs to use for irrigation of wetlands. Further, based on the limited water supplies in the area, it is doubtful that the SWCD could obtain any water rights for this purpose. Consequently, the DEIS assumption that there is available water for the SWCD's use in creating wetlands on the Mud Creek site is a fundamental flaw that further undermines this proposed mitigation measure.

Another critical flaw in the first mitigation measure is the assumption that simply removing livestock from the property and/or applying some water to the Mud Creek property will create and sustain wetlands. As more fully discussed on page 29 of the Western Wetland Systems report that is submitted with these comments, the soils that underlie the Mud Creek site are quite porous. Further, the depth of the water table in that area ranges from 20 to 25 inches below the soil surface in the spring and 35 to 45 inches below the soil surface in summer. The effect of this is that simply removing livestock (and grazing) from the property will not automatically create wetlands. Consequently, assuming that water rights could be obtained by the SWCD for this use, it would be necessary to provide a significant amount of water to the ground to raise the water table to create wetlands. Further, water loss through seepage alone could total 5,184 to 6,192 acre-feet per year. Finally, the use of this water would potentially create additional impacts on the Price River system that were not addressed but should have been addressed in the DEIS.

The DEIS also fails to identify how many acres of wetlands might be enhanced or created at the Mud Creek site. None of the pages in the DEIS that propose this measure (2-19, 2-34, and 3-54) make any mention of the amount of wetlands that would be enhanced or created at the Mud Creek site. Based on the very limited discussion of this measure in the § 404 Application, it appears that no effort has been made so far to even identify what wetlands currently exist at the Mud Creek site, let alone speculate on how many new wetlands might be created. The failure to make this basic assessment of the Mud Creek site further demonstrates the failure of the DEIS to comply with the § 404(b)(1) guidelines and NEPA.

There is another basic flaw with the DEIS proposal involving the Mud Creek site. As discussed above, the DEIS failed to adequately assess the functions and values of the 100 acres of wetlands that would be flooded by the Narrows Reservoir. The DEIS likewise fails to identify the functions and values that newly-created wetlands along Mud Creek would have. Consequently, it is not possible through reading the DEIS to determine whether newly-created wetlands along Mud Creek would be equivalent to those of the wetlands that would be flooded by the Narrows Reservoir. However, as discussed in the Western Wetland Systems report on page 30, created wetlands along Mud Creek would not provide the same functions and values that were identified for the Narrows Basin in the 1992 study of the area. Consequently, this first proposed mitigation measure would not comply with the 1:1 functional value mitigation required under the Mitigation MOA.

The DEIS discussion of the Mud Creek site is also incomplete concerning the potential costs of this measure. The DEIS indicates that the purchase of this property would cost approximately \$110,000 (220 acres at \$500 per acre). See DEIS at Appendix D (1994 Fish and Wildlife Coordination Act Report at 22). The DEIS does not identify any other costs associated with this proposed mitigation measure. However, there clearly would be other costs incurred by the SWCD that would extend beyond the transactional costs involved in obtaining the property, if that was possible. For example, the DEIS indicates that some stream channel work would be performed to create additional wetlands adjacent to the stream, and some earth work to create swales and berms might be necessary to create cells of new wetlands. The costs of these activities should have been identified. The costs of the fencing that the DEIS indicated would be installed also should have been identified. The costs of obtaining water rights for this measure also should have been identified. The DEIS also indicates that the wetland area would be maintained by the SWCD under a memorandum of agreement with the Utah Division of Wildlife Resources. The long-term costs incurred by the SWCD pursuant to this memorandum of agreement should have been identified.

The § 404 Application is likewise silent as to the costs of the first proposed mitigation measure. Unlike the DEIS, it indicates that before the proposed mitigation could be undertaken at the Mud Creek site, a number of steps would first need to be completed, including: (1) a wetland delineation mapping of the site; (2) investigation of ground water levels; (3) installation of a temporary check dam with piezometers to see whether check dams could raise water levels; (4) excavation of test pits to determine soil type and stratification; and (5) design mitigation measures. The costs of these activities were not identified. This discussion in the § 404 Application reveals two very important things. First, none of the actual on-the-ground investigations that must be undertaken to determine whether the Mud Creek area might be a suitable mitigation site have been performed and, thus, there is no scientific basis to support any conclusion that the Mud Creek area might be a suitable mitigation site. Second, the DEIS discussion of the costs of mitigation at the Mud Creek area is incomplete and misleading.

Finally, the DEIS is also too vague in specifying monitoring plans to ensure that wetlands enhancement and creation at the Mud Creek site would be completed and effectively maintained over time. Instead, it merely states that the wetland area would be maintained by the SWCD

under a memorandum of agreement with the Utah Division of Wildlife Resources. Such a general statement is unacceptably vague and another indication of the inadequacies in the DEIS discussion of the Mud Creek site.

It is doubtful that the second proposed mitigation measure, purchasing private land to the west of Lower Gooseberry Reservoir to create wetlands, would be able to be implemented and, even if implemented, it would not compensate for the functions and values of the flooded wetlands in the Narrows Basin.

The second mitigation measure proposed in the DEIS is the purchase of private land (page 2-19 - 120 acres; page 2-34 - 86 acres) to the west of Lower Gooseberry Reservoir for the creation of new wetlands (the "Lower Gooseberry site"). The DEIS describes this as private land that is presently irrigated to provide pasture for sheep grazing. It indicates that after the land is purchased, water would be diverted from an existing diversion structure on Cabin Hollow Creek and transported through an open ditch to the site. Then, through a number of openings in the open ditch, water would be turned onto the site to flow around swales, berms, and other earthwork and create wetlands.

As a preliminary matter, it is unclear whether the SWCD would be able to purchase all of the land to the west of Lower Gooseberry Reservoir that is covered by the proposed mitigation. At the public hearing on the DEIS on April 23, 1998 in Mt. Pleasant, the owner of a portion of this property stated that his family has owned the property for several generations and that the family has no intention of selling the property. Since the property is located within the boundaries of the SWCD, the SWCD might be able to obtain the property through an eminent domain action. However, the law is not clear whether a water conservancy district can condemn real property for mitigation measures. The SWCD may not wish to incur the expenses and loss of good-will in such a condemnation action. Consequently, it appears that the second mitigation measure might not be able to be implemented.

Another flaw in the proposed mitigation concerning the Lower Gooseberry site is the assumption in the DEIS that there is water in Cabin Hollow Creek that is available to be used on the property for wetland purposes. As previously discussed, under Utah law, before water may be diverted and used for a particular purpose, an approved water right for the intended diversion and use must be obtained through the Utah Division of Water Rights. The DEIS did not identify any water rights that the SWCD has that would allow it to divert water from Cabin Hollow Creek to use for the irrigation of wetlands at the Lower Gooseberry site. Further, based on the limited water supplies in the area, it is doubtful that the SWCD could obtain any water rights for this purpose. Consequently, the DEIS is mistaken in assuming that there is available water from Cabin Hollow Creek for the SWCD to use to create wetlands at the Lower Gooseberry site. This mistake further undermines the DEIS discussion of this proposed mitigation measure.

Another basic mistake in the DEIS discussion of proposed mitigation at the Lower Gooseberry site is the assumption that simply removing sheep grazing from the property and applying some water to the property will create and sustain wetlands. As more fully discussed on page 29 of the Western Wetland Systems report that is submitted with these comments,

sagebrush is the dominant vegetation in this area. Sagebrush typically occurs on coarse-textured soils that are very permeable, and it is not uncommon for such permeability to be as high as 0.2 inches of water per hour, or 4.8 inches per day. In such case, assuming that water rights were obtained by the SWCD for this use, seepage from irrigation of the Lower Gooseberry site (86-120 acres depending on which section of the DEIS is believed) could result in losses of water in amounts greater than the 5,400 acre-feet stored and diverted by the Project. Further, in addition to loss of water through seepage, water would be lost through evaporation and seepage in transmission from Cabin Hollow Creek through the open ditch to the site, and from evaporation at the site. Consequently, under a water-budget assessment alone, it is clear that the second proposed mitigation measure is unworkable. Finally, the use of this water would potentially create additional impacts on the Price River system that were not but should have been addressed in the DEIS.

The DEIS also fails to identify how many acres of wetlands might be created at the Lower Gooseberry site. The pages in the DEIS that propose this measure (2-19, 2-34, and 3-54) state that the site is either 86 or 120 acres in size. However, no mention is made in the DEIS or the § 404 Application of the actual acreage of wetlands that would be created under this proposed mitigation. The lack of assessment is not acceptable under the § 404(b)(1) guidelines or NEPA.

Since the DEIS fails to assess how many acres of wetlands might be created at the Lower Gooseberry site, it also fails to identify the functions and values of the wetlands that might be created. Consequently, even if the DEIS had adequately identified the functions and values of the 100 acres of wetlands that would be flooded by the Narrows Reservoir, it is not possible by reading the DEIS to determine whether newly-created wetlands in the Lower Gooseberry site would provide equivalent functions to the wetlands that would be flooded by the Narrows Reservoir. However, it appears that newly-created wetlands in the Lower Gooseberry site would not provide the same functions and values that were identified for the Narrows Basin in the 1992 study of the area. Consequently, this proposed mitigation would not comply with the 1:1 functional values mitigation required under the Mitigation MOA.

The § 404 Application and the DEIS discussions of the proposed mitigation at the Lower Gooseberry site completely ignore the potential costs of this measure, which at a minimum clearly would involve: (1) the costs to purchase or condemn, if possible, the 86-120 acres; (2) the costs to obtain water, if possible, to irrigate sagebrush; (3) the costs of performing the earthwork and recontouring necessary to facilitate wetland creation; and (4) the costs of monitoring and maintaining the created wetlands. The true costs of the Project are masked by failing to include this important information.

As with its discussion of the mitigation proposed for the Mud Creek site, the DEIS discussion of the mitigation proposed for the Lower Gooseberry site is woefully inadequate in describing how wetlands creation at the Lower Gooseberry site would be monitored and maintained. Instead, the DEIS only states that the wetland area "would be maintained by SWCD under a MOA with the UDWR, COE, and the FS." See DEIS at 2-19, 2-34. This vague generality fails to comply with the requirements of the § 404(b)(1) guidelines and NEPA.

There are several basic flaws with the third proposed mitigation measure, which involves the use of Fairview Lakes water to enhance and create new wetlands adjacent to the Narrows Reservoir and, even if implemented, this measure would not compensate for the functions and values of the flooded wetlands in the Narrows Basin.

The third mitigation measure proposed in the § 404 Application and the DEIS would involve water releases from the Fairview Lakes through a new outlet to land that is adjacent to the Narrows Reservoir. The DEIS indicates that the outlet would be designed to begin to release water into an open ditch system when water in Fairview Lakes reached a certain level in the spring, and stop releases sometime in the fall. Further, “some recontouring would be performed to ensure that soils become saturated.” See DEIS at 2-19. The DEIS indicates that up to 72 or 100 acres of wetlands (depending on which section of the DEIS is read) would be created under the third proposed mitigation measure. The DEIS does not identify the ownership of the land that covered by the third proposed mitigation measure. However, the DEIS elsewhere indicates that the majority of the land that would be flooded by the Narrows Reservoir is privately owned. See DEIS at 3-76.

A basic flaw in the third proposed mitigation measure is the assumption in the DEIS that the SWCD has the authority to regulate and manage water releases from Fairview Lakes. The SWCD has no water rights for Fairview Lakes. Rather, the water rights covering the water in Fairview Lakes are owned by the Cottonwood-Gooseberry Irrigation Company (the “Company”). These rights allow storage in the Fairview Lakes, then diversion through the Fairview Canal to the Fairview Tunnel and into Cottonwood Creek for rediversion and the irrigation of land in the Sanpete Valley. Further, no one may use these water rights to create wetlands adjacent to the Narrows Reservoir without first obtaining the approval of the Utah Division of Water Rights of a change application to make that use of the rights. Consequently, the DEIS is mistaken in assuming that there is available water from the Fairview Lakes for the SWCD to use to create wetlands adjacent to the Narrows Reservoir.

Since the DEIS proposes using water that is currently used for irrigation of crops in the Sanpete Valley for the irrigation of wetlands adjacent to the Narrows Reservoir, it should have discussed the environmental and socioeconomic impacts of the proposed change of use of water. The DEIS should also have discussed whether a § 404 Permit would be necessary to install the new outlet of Fairview Lakes that would be used to release water into the open ditch system and to the areas to be irrigated for wetland creation.

Another flaw in the DEIS discussion of the possibility of creating new wetlands adjacent to the Narrows Reservoir is the assumption that periodic water releases from Fairview Lakes will be sufficient to create and maintain wetlands. As mentioned above, the DEIS simply indicates that a new outlet to Fairview Lakes will be installed to release water from Fairview Lakes into an open ditch system when Lake levels reach a certain point in the spring, and to stop releases sometime in the fall. As a preliminary matter, it is questionable that periodic water releases that are based only on Lake levels and/or the season of the year will provide enough water to create and sustain wetlands. It appears impractical to rely on water releases that are governed by factors

other than the water required to create and maintain a wetlands to accomplish this purpose. The DEIS should have discussed this operational inconsistency.

Another flaw in the DEIS discussion of this third proposed mitigation measure is its failure to identify how much water would be needed to create 72 to 100 acres of wetlands in the area adjacent to the Narrows Reservoir. This should have been discussed, as well as the impacts to the Price River system from such water use.

As more fully discussed on page 29 of the Western Wetland Systems report that is submitted with these comments, sagebrush is the dominant vegetation in this area. Sagebrush typically occurs on coarse-textured soils that are very permeable, and it is not uncommon for such permeability to be as high as 0.2 inches of water per hour, or 4.8 inches per day. In such case, assuming that water rights were obtained by the SWCD for this use, seepage from irrigation of the 72 to 100 acres adjacent to the Narrows Reservoir could result in seepage losses of water in amounts greater than the 5,400 acre-feet stored and diverted by the Project. Further, in addition to loss of water through seepage, water would be lost through evaporation and seepage in transmission from Fairview Lakes through the open ditch to the site, and from evaporation at the site. Consequently, under a water-budget assessment alone, it is clear that the third proposed mitigation measure is unworkable.

The DEIS fails to identify the functions and values of the wetlands that might be created adjacent to the Narrows Reservoir. Consequently, even if the DEIS had adequately identified the functions and values of the 100 acres of wetlands that would be flooded by the Narrows Reservoir, it is not possible by reading the DEIS to determine whether newly-created wetlands adjacent to the Reservoir would provide equivalent functions to the wetlands that would be flooded by the Narrows Reservoir. However, it appears that newly-created wetlands in the Lower Gooseberry site would not provide the same functions and values that were identified for the Narrows Basin in the 1992 study of the area. Consequently, it appears that this proposed mitigation would not comply with the 1:1 functional values mitigation required under the Mitigation MOA.

The DEIS discussion of the third proposed mitigation measure ignores the potential costs of this measure, which at a minimum clearly would involve: (1) the costs to purchase or condemn, if possible, the 72-100 acres; (2) the costs to obtain water from the Cottonwood-Gooseberry Irrigation Company, if possible, to create wetlands; (3) the costs of installing the new outlet at Fairview Lakes; (4) the costs of establishing the open ditch system to convey water for wetlands irrigation; (5) the costs of performing the earthwork and recontouring necessary to ensure saturation of soils and subsequent wetland creation; and (6) the costs of monitoring and maintaining the created wetlands. By failing to include this information, the DEIS presents an incomplete picture of the actual costs of the Project. Further, the failure renders the DEIS summary of the costs of the Project on Table 2-5 on page 2-25 misleading.

As with its discussion of the mitigation proposed for the Mud Creek site and the Lower Gooseberry site, the DEIS discussion of the third mitigation measure is similarly inadequate in describing measures to be taken by the SWCD to ensure that wetlands adjacent to the Narrows

Reservoir would be created and perpetually maintained. However, the DEIS states only that the wetland area “would be maintained by the UDWR under a MOA with the SWCD.” See DEIS at 2-19, 2-34. This statement is simply too vague to comply with the requirements of the § 404(b)(1) guidelines or NEPA.

Another significant problem with the DEIS discussion of the third proposed mitigation measure is its failure to assess how the 72 to 100 acres of wetlands that might be created adjacent to the Narrows Reservoir would be impacted by the development and recreational use that already occurs in the area, and which will be further stimulated by the construction and operation of the Narrows Reservoir. The DEIS states that there will be approximately 46,400 visitor days of new recreational use in the area of the Project, and that direct impacts from the Project will occur in areas 8 to 10 miles in all directions from the Reservoir. Therefore, the DEIS should have discussed the potential, significant impacts to the wetlands that would be created adjacent to the Narrows Reservoir, an area of very heavy use, in its assessment of this proposed mitigation measure.

The DEIS discussion of the fourth proposed mitigation measure, involving the creation of wetlands near the Manti Meadows Waterfowl and Management Area, is confusing and contradictory, and this measure would not provide in-kind mitigation for the flooded wetlands in the Narrows Basin.

The fourth mitigation measure proposed in the § 404 Application and the DEIS involves the creation of wetlands near the Manti Meadows Waterfowl and Management Area (“Manti Meadows”). This discussion is very confusing and contradictory. It is also clear that this proposed mitigation would not provide in-kind mitigation for the flooded wetlands in the Narrows Basin.

Pages 2-19 and 2-34 of the DEIS indicate that this proposed mitigation would involve making return flows from the Narrows Project available to the UDWR for use at Manti Meadows. This arrangement would rely on “diverting Six Mile Creek water which flows into Gunnison Reservoir and delivering it to the Manti Meadows through existing facilities.” See DEIS at 2-19 and 2-34. Page 2-19 indicates that this would result in the creation of up to 100 acres of wetlands. By contrast, page 2-34 indicates that this measure would create up to 72 acres of wetlands.

However, beyond those brief descriptions, pages 2-19 and 2-34 of the DEIS are unacceptably vague in describing this proposed mitigation. For example, these pages fail to identify, among other things, how much water would be involved in the water exchange involving Narrows Project return flows and water from Six Mile Creek, who owns the water rights to the water from Six Mile Creek that would be covered by the exchange, what are the “existing facilities” that would be used in this process, where the return flow/exchange water would actually be used, and how the return flow/exchange water would be used to create wetlands, how the wetlands would be maintained, the costs of this proposed mitigation measure, and the impacts of this process.

Further, the descriptions of the fourth proposed mitigation measure on pages 2-19 and 2-34 of the DEIS conflict with the description of the measure on page 3-55 of the DEIS. In contrast to the descriptions on pages 2-19 and 2-34, page 3-55 describes the measure as follows:

This mitigation alternative would be to enlarge the existing wetlands at Manti Meadow by excavating uplands on the north and east sides and some excavation towards the west to create approximately 100 acres of wetlands.

The SWCD would have primarily [sic] responsibility for implementation of the wetland measures described above. The SWCD would be responsible for any funding and acquiring all lands and rights-of-way. The SWCD would provide and transplant any planting needed.

The description of the fourth proposed mitigation measure on page 3-55 of the DEIS is so different from the description of the same measure on pages 2-19 and 2-34 that it is impossible to determine which is being proposed. Further, both descriptions are so incomplete as to give the impression that the Bureau never gave any careful consideration to this measure, or commitment to describing it in an intelligible manner in the DEIS.

Finally, as discussed on page 29 of the Western Wetland Systems report submitted with these comments, creating wetlands by whatever process near the Manti Meadows would fail to provide in-kind mitigation for the 100 acres of wetlands that would be flooded by the Narrows Reservoir. The Manti Meadows are located in a completely different watershed and geomorphic area than the impact area of the Project. Wetlands in the Manti Meadows would provide low-elevation waterfowl habitat. However, the wetlands that would be flooded by the Narrows Reservoir are in a high-elevation area, with other distinct functions and values, including sediment stabilization, sediment retention, nutrient transformation, flood flow alteration, ground water discharge, production export to aquatic systems, aquatic life/diversity, general wildlife diversity and abundance, and wildlife breeding habitat. Consequently, created wetlands in the area of the Manti Meadows could not compensate for the flooding of wetlands by the Narrows Reservoir.

In sum, the § 404 Application and the DEIS do not comply with the requirements of the federal regulations and the Mitigation MOA concerning mitigation of the adverse impacts to the wetlands in the area of the Narrows Reservoir that will be caused by construction of the Project. Since the DEIS fails to identify all of the wetlands that may be impacted by the Narrows Project, it cannot satisfy the legal requirement that mitigation measures for project impacts on wetlands be fully considered. Further, under the § 404(b)(1) guidelines, "no discharge shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." See 40 C.F.R. § 230.10(d). Therefore, the § 404 Application should be denied.

5. **The DEIS acknowledges that the Project will adversely impact water quality in Gooseberry Creek, lower Gooseberry Reservoir, and Scofield Reservoir but fails to propose specific measures to mitigate these impacts.**

The DEIS acknowledges that construction and operation of the Narrows Reservoir will result in decreased flows in Gooseberry Creek, and these decreased flows will adversely impact water quality in Middle Gooseberry Creek, lower Gooseberry Reservoir, and Scofield Reservoir. See DEIS at 3-43. Among other things, the DEIS indicates that the average annual inflow to Lower Gooseberry Reservoir from Gooseberry Creek will be reduced by 72%, thus increasing dissolved oxygen levels and increasing the potential for fish kills. Further, the reduced spills from Scofield Reservoir caused by the Project will increase fish kills and increase the previously estimated Project depletions to the Colorado River System from 5,557 to 5,709 acre-feet per year. See DEIS at 3-45.

The DEIS states that implementation of two mitigation measures will alleviate these impacts on water quality. The mitigation measures would involve: (1) narrowing the channel in Gooseberry Creek between the Narrows Dam and the Gooseberry Reservoir; and (2) reducing phosphorous loading through improvements to segments of tributary streams upstream of Scofield Reservoir. See DEIS at 3-49. However, as discussed below, the proposed mitigation measures will not compensate for the Project caused harm to water quality in Gooseberry Creek, lower Gooseberry Reservoir, and Scofield Reservoir.

Narrowing the channel of middle Gooseberry Creek is not an effective mitigation measure.

The DEIS indicates that under the first proposed mitigation measure, the channel in Middle Gooseberry Creek (between Gooseberry Reservoir and the Narrows Dam) would be narrowed. The DEIS indicates that the reduced flows in middle Gooseberry would cause this condition to eventually occur naturally, but that this process would be expedited through utilization of “certain man-made improvements.” See DEIS at 3-49. It does not describe these “improvements.” Rather, it attempts to compensate for this ambiguity by indicating that the design of these improvements would be developed by the Sanpete Water Conservancy District in conjunction with the Forest Service, the Fish and Wildlife Service, the Army Corps of Engineers, and the Utah Division of Wildlife Resources. The DEIS also indicates that “where the stream passes through private land a right-of-way corridor adjacent to the stream would be acquired to protect the stream banks and protect water quality,” and that fencing would be used to protect the stream from livestock. The DEIS also suggests that this measure would improve water quality by reducing the amount of nutrient flow into Lower Gooseberry Reservoir. However, no data is provided concerning the quantities and types of nutrients affected by this measure, or the specific effect this measure would have on water quality in Lower Gooseberry Reservoir. See DEIS at 3-49.

The description of this proposed mitigation measure is so general that it suggests the Bureau did not take a hard look at the obvious water quality impacts from the Project and how to mitigate those impacts. The DEIS cites to no reports or data to support its theory that narrowing

Gooseberry Creek will offset the Project's negative impacts on water quality. "Certain man-made improvements" are not part of the natural stream geomorphology in the area, and their placement might only increase erosion along the sides of the creek. Further, a narrower channel in Middle Gooseberry Creek will be susceptible to flooding or sediment loading during the spring in the occasional years of large snow-melt. As more fully discussed on pages 30-31 of the Western Wetland Systems report submitted with these comments, Middle Gooseberry Creek is a meandering creek, and studies indicate that placing man-made structures in meandering creeks frequently fails to promote channel narrowing and instead results in bank erosion and channel widening and/or degradation.

In addition, the DEIS does not specify the size of the real property it indicated would be acquired to constitute the right-of-way corridor that would be managed to protect water quality or whether the property is available for purchase. However, based on comments made by Mr. John Mason at the public hearing on the DEIS held on April 23, 1998 in Mt. Pleasant, it appears that this property is not for sale. Consequently, it appears that this aspect of the proposed mitigation measure could not be implemented.

The DEIS was too general in theorizing that fencing certain segments along Middle Gooseberry Creek would protect the stream from livestock and thereby compensate for the Project's impacts on water quality. In the absence of more details about this component of this proposed mitigation measure, it is not possible to evaluate the effect of this activity.

Finally, the DEIS failed to identify the potential costs of installing, maintaining, and monitoring the effectiveness of the "certain man-made improvements" in Middle Gooseberry Creek. The DEIS failed to identify the potential costs in obtaining the real property that would constitute the right-of-way corridor used to protect water quality. The DEIS also failed to identify the potential costs of maintaining the property and monitoring the effectiveness of its use. The DEIS also failed to identify the costs of fencing and related management in protecting the stream from livestock. The failure to identify and discuss the costs of the proposed mitigation measures has the effect of masking the true costs of the Project. It also violates the policy of the State of Utah that "mitigation of adverse environmental impacts should be considered as part of any project and should be reflected in project construction, operation, and maintenance costs." See Utah State Water Plan at 14-4.

The second measure proposed to mitigate Project impacts on water quality, measures proposed to reduce phosphorous loading in Scofield Reservoir, are too vaguely described and are likely not effective.

The DEIS indicates that the purpose of the second proposed water quality mitigation measure would be to reduce the phosphorous loading of Scofield Reservoir. Under this measure, certain improvements would be made to approximately 9.5 miles of stream segments on tributary streams above Scofield Reservoir. The DEIS indicates that the improvements would consist of stream bank stabilization, "primarily through riparian plantings." Also, the stream banks would be fenced "to reduce the amount of sediment and animal waste and hence the amount of phosphorous into the reservoir." See DEIS at 3-49.

However, the DEIS discussion of this proposed mitigation measure is simply too vague. It fails to identify the specific stream segments that would be “improved” or the streams on which the segments are located. It also provides no details concerning what types and quantities of sediments this measure would prevent from reaching Scofield Reservoir.

The DEIS cites to a study funded under a Clean Lakes Phase II grant concerning water quality issues involving Scofield Reservoir, and indicates that the study concluded that reducing phosphorous loading of Scofield Reservoir was the most effective way to reduce water quality problems in the Reservoir. Consequently, the DEIS should have indicated the sources of the phosphorous loading to the Reservoir (Fish Creek, Pondtown Creek, Mud Creek, etc.) and identified which of these sources would contain the stream segments proposed for improvement under the second mitigation measure. Consequently, although reducing the inflow of phosphorous to Scofield Reservoir may help to lessen the Project’s negative impacts on water quality in the Reservoir, the discussion of the second mitigation measure is so vague that it is impossible to determine whether this measure would have a chance of being effective.

Further, the DEIS does not state who owns the property that is crossed by the 9.5 miles of stream segments that would be “improved,” or whether the property is available for purchase. Consequently, it is unclear whether this measure could even begin to be implemented.

The DEIS also fails to discuss the potential costs of purchasing and managing this property, including the 9.5 miles of fencing that appear to be required. Further, the DEIS fails to identify the long-term costs of monitoring the management of the stream segments and the water quality in Scofield Reservoir that would be necessary under this proposed mitigation measure. The failure to identify and discuss the costs of the proposed mitigation measures prevents an understanding of the actual costs of the Project. It also violates the policy of the State of Utah that “mitigation of adverse environmental impacts should be considered as part of any project and should be reflected in project construction, operation, and maintenance costs.” See Utah State Water Plan at 14-4.

The probability and effectiveness of all proposed mitigation measures should have been discussed in the DEIS.

The uncertainty as to whether the above-discussed proposed mitigation measures might be implemented in the first instance and, if so, whether they might be effective highlights a problem that occurs throughout all discussions of proposed mitigation measures in the DEIS, since it frequently is unclear whether the measure being discussed will actually be implemented or is merely being discussed to appear to comply with NEPA. This is particularly the case when property is proposed to be purchased, or other actions outside the jurisdiction of the Bureau are proposed. The CEQ’s guidance on the federal regulations implementing NEPA indicates that an EIS must discuss the probability that proposed mitigation measures will be implemented:

All relevant, reasonable mitigation measures that could improve the project are to be identified, even if they are outside the jurisdiction of the lead agency . . . to

ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed. Thus, the EIS and the Record of Decision should indicate the likelihood that such measures will be adopted or enforced by the responsible agencies.

See Council on Environmental Quality, Questions and Answers about the NEPA Regulations No. 19b (March 16, 1981). The failure of the DEIS to indicate the probability of whether the land referenced above may be purchased for water quality mitigation violates these requirements. The failure to address this issue also undermines the DEIS conclusion that the known adverse water quality impacts of the Narrows Project will be mitigated by the proposed mitigation measures.

The DEIS assumes that the water quality impacts of the Narrows Project will be caused solely by reduced stream flows below the Narrows Dam. However, water quality will also be affected by other factors. For example, since the Narrows Project will cause reduced stream flows and a reduced quantity of water in Scofield Reservoir, it is likely that the temperature of the Reservoir water will increase, particularly in the summer months. Higher water temperatures, in turn, will likely affect the quality of the stored water. However, the DEIS fails to analyze this possibility. Further, construction of the Narrows Dam, relocation of State Road 264 (SR-264), and the anticipated recreational use of the Narrows Reservoir with its direct impacts 8 to 10 miles in all directions of the Narrows Project will likely have significant impacts on water quality. These potential impacts should have been identified and analyzed in the DEIS. See 40 C.F.R. § 1502.16 (requiring both direct and indirect effects to be analyzed). Consequently, the failure to analyze these impacts violates NEPA and renders the DEIS legally flawed.

Health concerns related to impaired water quality in Scofield Reservoir.

Another concern related to impaired water quality in Scofield Reservoir from the Project that the DEIS failed to discuss is the potential for health problems among persons whose drinking water comes from the Reservoir. Dr. Max Morgan, a physician in Carbon County for over twenty-two years, noticed that in the drought year of 1992, when Scofield Reservoir was at a very low level, there was a significant increase in the numbers of patients he treated for gastroenteritis, abdominal cramping, vomiting, and bloody diarrhea. Further, the records for that year at Castleview Hospital indicated an increase in the number of patients being treated for hepatitis. Dr. Morgan conducted an informal study of this situation among other physicians in the area, who confirmed that they also had an increase in patients with gastrointestinal disorders in 1992. Dr. Morgan believes that there is a correlation between low water levels in Scofield Reservoir and gastrointestinal disease caused by either residual bacterial coliforms in the highly concentrated bottom water used for drinking water or the superchlorination that is necessary to render the water safe. He submitted comments to the Bureau on the prior DEIS for the Project in which he discussed these conclusions and his concern that further reductions in the level of Scofield Reservoir from the Project could adversely impact the health of persons in Carbon County. These concerns were also raised in the scoping letters the Bureau invited concerning this DEIS. The failure of the DEIS to address this issue violates the requirement in the federal

regulations implementing NEPA that an EIS analyze both the direct and indirect effects of a proposed action. See 40 C.F.R. § 1502.16.

Conclusion.

Under the § 404(b)(1) guidelines, “no discharge of dredged or fill materials shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.” See 40 C.F.R. § 230.10(d). The DEIS acknowledges that the Narrows Project will adversely affect water quality in Middle Gooseberry Creek, lower Gooseberry Reservoir, and Scofield Reservoir. Further the mitigation measures proposed to offset these negative impacts on water quality are so vague that it is unclear what effect they might have. As a result, the § 404 Application should be denied because the Narrows Project fails to comply with the requirements of NEPA and the 404(b)(1) guidelines.

6. **The DEIS acknowledges that the Narrows Project will degrade and destroy spawning habitat for cutthroat and rainbow trout but fails to explain how this loss will be mitigated.**

The DEIS acknowledges that the Project will have significant, negative impacts on stream fisheries, but is vague in describing how these impacts might be mitigated. The DEIS indicates that the intent of the proposed mitigation “is to provide full mitigation for all adverse impacts which would result in no residual impacts.” See DEIS at 3-37. But, the DEIS fails to provide any assessment of whether these proposed measures might accomplish this goal.

Specifically, the DEIS indicates that the Project would destroy: (1) 100% of the spawning habitat of the Yellowstone cutthroat in the 1 mile of Gooseberry Creek and the 4.3 miles of the headwater tributaries that join to form Gooseberry Creek; (2) 94% of the spawning habitat, and 45% of the fry habitat, of the Yellowstone cutthroat in the 3 miles of Middle Gooseberry Creek; (3) 16% of the spawning habitat for rainbow trout in Fish Creek; and (4) 41% of spawning habitat for the Yellowstone cutthroat in Lower Cottonwood Creek. See DEIS at 3-38, Table 3-11.

These streams are classified by the Utah Department of Wildlife Resources as Class 2, 3, and 3B waters, all of which are extremely important fisheries. The loss of extensive spawning habitat would likely destroy the self-reproducing populations of cutthroat and rainbow trout that presently inhabit these streams. This would be an irretrievable loss that cannot be mitigated by planting hatchery fish or attempting to improve habitat off site. Consequently, the Narrows Project would have a permanent adverse impact on the stream fisheries contrary to express state policy favoring the preservation of such unique resources.

The DEIS briefly proposes eleven measures that might be implemented to mitigate the Project’s impact on stream fisheries. See DEIS at 2-12 to 2-15, 3-38 at Table 3-11. However, the discussion of these measures is too general and does not specify how the measures will compensate for the Project’s destruction of the spawning habitat. In fact, only five of the eleven

proposed mitigation measures even mention spawning habitat. Consequently, the probability that these proposed measures will mitigate the destruction of spawning habitat appears very low.

The first proposed mitigation measure that briefly mentions spawning habitat involves year-round releases of 2.6 cfs from the Fairview Lakes into two tributaries of Gooseberry Creek that the DEIS indicates are dry most of the year. See DEIS at 2-12. The DEIS indicates that these water releases would establish a flow of 1.3 cfs in each tributary and create approximately 2.3 miles of spawning habitat for cutthroat trout. However, this discussion merely concludes, without referring to any supporting study or data, that releasing water into periodically dry streams will create and sustain spawning habitat. Another flaw in this DEIS discussion is the assumption that a release of 2.6 cfs from Fairview Lakes into two streams will evenly divide the 2.6 cfs into equal flows in each stream and establish a 1.3 cfs in each stream along its length. Such an assumption ignores the fact that water losses from seepage and evaporation would be high in a periodically dry stream. Thus, a release of 1.3 cfs into a stream will not result in a 1.3 cfs flow along its length.

Another basic flaw with the DEIS discussion of the first proposed mitigation measure is the assumption that the SWCD has the authority to regulate and manage water releases from Fairview Lakes. The SWCD has no water rights for Fairview Lakes. Rather, the water rights covering the water in Fairview Lakes are owned by the Cottonwood-Gooseberry Irrigation Company (the "Company"). These rights allow storage in the Fairview Lakes, then diversion through the Fairview Canal to the Fairview Tunnel and into Cottonwood Creek for redistribution and the irrigation of land in the Sanpete Valley. No one may use these water rights to create wetlands adjacent to the Narrows Reservoir without first obtaining the approval of the Utah Division of Water Rights of a change application to make that use of the rights. Consequently, the DEIS is mistaken in assuming that there is immediately available water from the Fairview Lakes for the SWCD to use to mitigate Project impacts to spawning habitat.

The DEIS also theorized that an unspecified amount of water could be released from Fairview Lakes to create from 72 to 100 acres of wetlands in an area adjacent to the Narrows Reservoir. The DEIS should have discussed whether there is enough water for both proposed mitigation measures, and the specific steps that would be necessary to implement such measures.

The second proposed mitigation measure that mentions spawning habitat involves stabilizing the stream banks along middle Gooseberry Creek. See DEIS at 2-12. As discussed above in the criticism of the measures that the DEIS proposes to mitigate the Project's acknowledged impacts on water quality, this stabilization is supposed to occur naturally or by placement of "man-made improvements" in middle Gooseberry Creek. However, no data supports this action as an effective measure to create spawning habitat. Further, as more fully discussed on pages 30-31 of the Western Wetland Systems report submitted with these comments, Middle Gooseberry Creek is a meandering creek, and studies indicate that placing man-made structures in meandering creeks frequently fails to promote channel narrowing and instead results in bank erosion and channel widening and/or degradation.

The third proposed mitigation measure that mentions spawning habitat involves year-round releases from the Narrows Reservoir to provide flushing flows below the Dam. See DEIS at 2-13. The DEIS discussion of how the measure would mitigate for impacts on spawning is short and vague. It merely states: “These additional releases [of 1 cfs] would be used to provide additional in stream flows or to flush accumulated silt and fine sediments from the streambed to enhance spawning habitat.” (emphasis added). However, no reports or data are listed or summarized to support the premise that removal of silt or fine sediments from a stream channel will enhance spawning habitat. No data or reports are listed or summarized to support the DEIS statement that the release of 1 cfs of Reservoir water into Gooseberry Creek would be sufficient to enhance spawning habitat. Further, the DEIS reference to enhancing spawning habitat ignores that it previously acknowledged that the Project would destroy 94% of the spawning habitat of the Yellowstone cutthroat in the 3 miles of Middle Gooseberry Creek. Consequently, there is almost no spawning habitat available for enhancement in the stream.

The fourth proposed mitigation measure mentions habitat and involves making improvements to 15.5 miles of stream segments in the Price River drainage. See DEIS at 2-13. The DEIS indicates that approximately 206 acres of rights-of-way would be acquired, a 200 foot wide corridor would be acquired, and fishery habitat improvements and some minor channel work would be completed. However, it does not provide any details about the actual “fishery habitat improvements” or “minor channel work” that would be completed. The DEIS identifies the 4 stream segments that would be the subject of this proposed mitigation measure. However, it does not identify the specific locations of the rights-of-way and real property that would be obtained, or the costs of acquiring such property. The failure to identify and discuss the costs of this and the other mitigation measures proposed on pages 2-12 to 2-14 of the DEIS misleads the reader of the DEIS about the true costs of the Project. It also violates the policy of the State of Utah that “mitigation of adverse environmental impacts should be considered as part of any project and should be reflected in project construction, operation, and maintenance costs.” See Utah State Water Plan at 14-4.

As in its discussions of other proposed mitigation measures, the DEIS discussion of this fourth proposed mitigation measure inadequately describe what steps the SWCD would take to ensure that the acquired property would be managed and monitored to ensure that the goals of this mitigation measure are accomplished and maintained. The DEIS simply indicates that “Memoranda of Understanding would be required between SWCD and the managing agencies.” See DEIS at 2-13. This statement is simply too vague to comply with the requirements of the § 404(b)(1) guidelines or NEPA.

Of the 11 mitigation measures proposed in the DEIS, only one mentions Cottonwood Creek. However, the DEIS acknowledges that Lower Cottonwood Creek would be significantly impacted by a 162% increase in the average annual flow of the stream, including an average summer flow increase of 300%. See DEIS at 3-39, Table 3-12. Table 3-12. Specifically, the DEIS indicates that this proposed mitigation involves the release of 2 cfs at the mouth of Cottonwood Creek, which is historically dewatered during the irrigation season. The DEIS indicates that this release of 2 cfs “would support fish habitat and create a fishery for local residents and enhance the wetland and riparian corridor.” See DEIS at 2-14 (emphasis added).

However, the DEIS fails to refer to or summarize data or studies that would support its suggestion that merely releasing 2 cfs of water into the mouth of Cottonwood Creek will compensate for the loss of 41% of spawning habitat for the Yellowstone cutthroat in Lower Cottonwood Creek. Consequently, the effect this paucity of discussion on mitigating impacts to Lower Cottonwood Creek is to propose no mitigation at all for Lower Cottonwood Creek. This is unacceptable and violates the clear requirement in the NEPA regulations that mitigation measures be analyzed for all adverse impacts. See 40 C.F.R. §1502.14(f); 1502.16(h).

The proposed mitigation is vague and its potential effectiveness is doubtful.

The brief references in the DEIS to measures intended to mitigate impacts to spawning habitat are too vague to give any real indication of whether they might achieve their purpose and, if so, the long-term effects of these measures, including the types and numbers of fish resulting from these measures. Nor does the discussion of these mitigation measures assess the likelihood that they can or will be implemented as required by the § 404(b)(1) guidelines and the CEQ regulations. Another flaw with these measures is that even if successful, they might constitute less than 1:1 functional value mitigation. Further, the proposed mitigation seeks only to enhance existing habitat. It does not seek to avoid the damage in the first place, or to minimize unavoidable damage, or to replace habitat that would be destroyed by the Project.

Conclusion.

Under the § 404(b)(1) guidelines, fish and wildlife and recreation values are one of the factors considered by the Corps in its public interest determination concerning an application for a 404 permit. See 33 C.F.R. § 320.4(a). The Narrows Project will significantly degrade the cutthroat and rainbow trout fisheries in Gooseberry Creek, Fish Creek, and Lower Cottonwood Creek, and may degrade other fisheries in the lower Price River, which is another indication that the Project is contrary to the public interest.

7. **The DEIS acknowledges that the Project will have adverse impacts to fisheries and recreational use in Scofield Reservoir, but fails to discuss measures to mitigate these impacts.**

The DEIS underestimates the impact of the Narrows Project on Scofield Reservoir, Scofield State Park, and related recreational activities.

The DEIS acknowledges that the reduced stream flows caused by the Narrows Dam will decrease water quality and increase the potential for fish kills in Scofield Reservoir. The DEIS fails to state or estimate how many fish will be killed as a result. Instead, it simply indicates that reduced flows will cause the Reservoir to operate at a lower level and decrease the average surface area of the Reservoir by about 250 acres. However, no data or methodology is provided to support this figure. See DEIS at 3-36. Further, the DEIS indicates that the reduced surface area “would result in a loss of 5,900 visitor days per year, including fishing.” See DEIS at 3-63. The DEIS indicates that this conclusion is based Table 3-16 on page 3-60, which summarizes data compiled by the Bureau on the use of Scofield Reservoir and Joes Valley Reservoir from

1982 to 1990. However, there is nothing on the cited table, which merely summarizes the number of visitor days at each facility, to support the DEIS conclusion that a reduction in the surface area of Scofield by 250 acres would cause a loss of 5,900 visitor days. In contrast, in his reservoir operations study discussed in Section 13 of these comments, Robert J. Murdock concludes that the surface area of Scofield Reservoir will be reduced by an average of approximately 302 acres. Assuming the DEIS rate of lost visitor days is accurate, Mr. Murdock's analysis indicates that the Project would result in the loss of 9,060 angler days per year at the Reservoir.

The DEIS also fails to discuss the potential impacts of the decreased surface area of Scofield Reservoir on the recreational activities other than fishing (e.g. boating, camping, hiking, birdwatching) that occur on or in the vicinity of the reservoir. Nor does the DEIS describe or analyze the effect of the Project's impacts on Scofield Reservoir on businesses that depend on the Reservoir (e.g. tourism, fishing, agriculture, industry, municipal) or Scofield State Park. Scofield Reservoir is the most important shore-line fishery in Utah and the centerpiece of Scofield State Park. Significant sums have been expended over the years on improving the water quality of Scofield Reservoir and upgrading Scofield State Park. However, the DEIS simply overlooks the significant and detrimental impact the Narrows Project will cause to the Park, other than to state:

Utah Division of Parks and Recreation estimates that this loss [of angler days at Scofield Reservoir] could represent more than \$5,000 in revenue loss to the State Park annually without mitigation. More frequent fish kills and accelerated [e]utrophication would also degrade the park. However, water quality mitigation has been provided. While the total inventory of water-based recreation may be increased, some of it will be offset by a downgraded State Park at Scofield.

DEIS at 3-76.

The DEIS fails to propose measures to mitigate the Project's adverse impact on recreational use of Scofield Reservoir and Scofield State Park.

The DEIS fails to propose measures to mitigate the Project's acknowledged impacts on recreational use of Scofield Reservoir and Scofield State Park. This failure violates the federal regulations implementing NEPA. See 40 C.F.R. §§ 1502.14(f); 1502.16(h). Instead of proposing mitigation measures, the DEIS engages in the following editorializing:

It should be pointed out that if Scofield Reservoir had not been enlarged to accommodate the Gooseberry Plan, it would have had a much smaller surface area and would have been able to support much less recreation use. Using Reclamation's data, the recreation use of Scofield without enlargement would have been about 26,100 visitor days less. According to UDWR data, there would have been 33,200 angler days less fisherman use.

(Emphasis added). This language is offensive and has no place in the DEIS. As a preliminary matter, there is no data in the DEIS to support the assertion that “Scofield Reservoir had not been enlarged to accommodate the Gooseberry Plan,” even though this language is repeated elsewhere in the DEIS. Further, even if Scofield Reservoir had been enlarged “to accommodate the Gooseberry Plan,” whatever that means, such a fact is simply not relevant to the objective analysis of potential Project impacts that the Bureau is supposed to be performing in the DEIS. The inclusion of the above-quoted language in the DEIS again underscores the bias in the DEIS and its failure to comply with the requirements of NEPA.

Conclusion.

Under the § 404(b)(1) guidelines, fish and wildlife values are one of the factors considered by the Corps in its public interest determination concerning an application for a 404 permit. See 33 C.F.R. § 320.4(a). The Narrows Project will significantly degrade the reservoir fisheries and reduce recreational opportunities in Scofield Reservoir. It will also reduce recreational use and related income opportunities at Scofield State Park. For these reasons, the proposed Narrows Project is not in the public interest and the § 404 Application should be denied.

8. **The DEIS suggestion that impacts to Scofield Reservoir would be somehow mitigated by recreational use of the Narrows Reservoir is wrong and is likely based on an incorrect assumption concerning the amount of water that would be stored in the Narrows Reservoir.**

The DEIS suggests that recreational use of the Narrows Reservoir would adequately mitigate the Project’s acknowledged impacts on recreational use of Scofield Reservoir and Scofield State Park. Specifically, the DEIS indicates that approximately 46,400 visitor days each year will be spent at the Narrows Reservoir and, of these, 13,700 visitor days each year would be spent on fishing. See DEIS at 3-63. The DEIS provides no methodology concerning this figure. Instead, it indicates that it is “based on use rates of Joe’s Valley and Scofield Reservoirs.” Further, there is no discussion in the DEIS of the water management plan that would be necessary to identify the costs associated with development of the fishery, whether the fishery could be maintained under the anticipated fishing pressure, and how many fish would be planted under the plan. The DEIS does, however, acknowledge that geographical and seasonal limitations may restrict recreational use of the Narrows Reservoir:

The higher elevation Narrows Reservoir will have a shorter season of use at +9,000 elevation than will Scofield Reservoir at about 7,600 feet elevation. Greater snow cover will probably occur at 9,000 feet with less opportunity for year-round fishing (ice) as compared to Scofield State Park

See DEIS at 3-63 to 3-64.

The DEIS did not identify how it determined that approximately 13,700 visitor days would be spent fishing at the Narrows Reservoir. However, it appears that such a determination would be based on the surface area of the Reservoir, which the DEIS indicates would be about

604 acres. See DEIS at S-4. Further, it appears that this estimated surface area is based on the proposed Reservoir's capacity of 17,000 acre-feet. However, there would be a fundamental mistake in estimating the fishing and other recreational use of the Reservoir based on an assumed surface size of 604 acres if this figure is based on there being 17,000 acre-feet of water in the Reservoir. The reason for this is that much of the time there will not be 17,000 acre-feet in the Reservoir. This conclusion is based on the plain language of the 1984 Agreement that the DEIS uses as the principal grounds for rejecting reasonable alternatives to the Project.

Specifically, Section IV ("Distribution of Water") of the 1984 Agreement specifies:

1. The active capacity of the reservoir for the Narrows Project shall not exceed 10,000 acre-feet to provide for the transmountain diversion to the Sanpich River System. If requirements are made of Sanpete to release or bypass water for minimum streamflow purposes in Gooseberry Creek below the Narrows Site the active storage capacity of the reservoir for such purposes may be increased as necessary, but shall not exceed 4,500 acre-feet of additional storage capacity. The total active storage capacity shall not exceed 14,500 acre-feet.

See DEIS Appendix A.

In other words, under the 1984 Agreement, the active storage capacity of the Narrows Reservoir may be 10,000 acre-feet plus whatever additional amount of water is required to provide the minimum instream flows in Gooseberry Creek below the Reservoir. Since the dead storage capacity of the Narrows Reservoir is 2,500 acre-feet, the total capacity of the Reservoir would be 12,500 acre-feet plus whatever additional amount of water is required to provide the minimum instream flows in Gooseberry Creek below the Reservoir. The Utah State Engineer's Memorandum Decision issued on January 7, 1985 approving the change applications filed by the SWCD to use its water rights for what became known as the Narrows Project specified that the SWCD release sufficient water from the Narrows Reservoir to maintain a minimum flow of 1 cfs in Gooseberry Creek immediately below the Narrows Dam, and release an additional 0.25 cfs if necessary to maintain a minimum flow of 1.5 cfs in Gooseberry Creek near the Gooseberry campground. One cfs of flow is equivalent to 724 acre-feet per year. Thus, it appears that although the Narrows Reservoir would have a maximum capacity of 17,000 acre-feet, the actual amount of water that would be allowed, under the 1984 Agreement, to be stored in the Reservoir would be closer to 13,000 acre-feet. Therefore, if the DEIS has assumed that recreational use of the Narrows Reservoir would be based on a surface area of 604 acres and based this figure on the assumption that 17,000 acre-feet of water would actually be stored in the Reservoir, the DEIS assumptions of recreational use of the Narrows Reservoir are likely wrong.

9. **The DEIS should not have been released before completion of the amended Biological Opinion analyzing potential impacts of the Project on the endangered Colorado Squawfish.**

Copies of correspondence in Appendix C of the DEIS, entitled "Biological Opinion," between the Bureau and the U.S. Fish & Wildlife Service ("FWS") concern recent studies by the

Utah Division of Wildlife Resources on the use of the lower Price River by the endangered Colorado Squawfish. The correspondence indicates that a number of Colorado Squawfish have been found in the lower 38 miles of the Price River. The correspondence also indicates that the Bureau and the FWS have engaged in formal consultation pursuant to Section 7 of the Endangered Species Act concerning the potential impact of the Project on the Colorado Squawfish. Further, the DEIS indicates that "Reclamation and SWCD are awaiting issuance of a new biological opinion form [sic] the Service addressing project impacts to be designated critical habitat and the Price River." See DEIS at 3-3. In such case, the DEIS was prematurely released, since it fails to include an analysis of one of the most critical environmental issues facing the Project, that being whether the Project would jeopardize the existence of the Colorado Squawfish.

If the awaited Biological Opinion concludes that the Project might so jeopardize the existence of the Squawfish, the requirements imposed on the Project under the Biological Opinion would need to be evaluated, at a minimum, in relation to the other mitigation measures proposed in the DEIS, and vice versa. However, since the DEIS was released prior to completion of the new Biological Opinion, the only remedy for this premature release is the preparation of a new or supplemental EIS that will be able to integrate and respond to the significant new information in the new Biological Opinion.

The DEIS also indicates that Project depletions to the Colorado River system are now estimated to be 5,709 acre-feet per year. This depletion figure is higher than the 5,557 acre-feet depletion that was used as the basis for the "Final Amended Biological Opinion on the Proposed Narrows Project, Small Reclamation Project Act Loan," dated January 9, 1995. See DEIS Appendix C. In the event that the new Biological Opinion referred to on page 3-1 of the DEIS is not based on the higher depletion figure of 5,709 acre-feet per year, it will be necessary for a new biological opinion to be prepared based on that depletion figure. Release of that document would also necessitate preparation, at a minimum, of a new or supplemental EIS.

10. The DEIS does not comply with the requirements of the January 22, 1998 Conservation Agreement concerning the spotted frog.

As more fully described on pages iv, 13, and 25-26 in the Western Wetland System report submitted with these comments, several agencies, including the Bureau, signed the interagency "Conservation Agreement for Spotted Frog," dated January 22, 1998, to prevent the spotted frog from being listed as a threatened or endangered species. The Agreement indicated, among other things, that the spotted frog occurs in only five locations in the Sevier River GMU. All five of the locations are within the proposed service area for the Narrows Project. The Agreement indicated that the major threats to the spotted frog within the Sevier River GMU were loss of habitat due to agricultural practices, and water development for municipal and agricultural purposes. Further, because of the isolated nature of the spotted frog's habitat, any loss of habitat would be considered significant. The Agreement also indicated that surveys, studies, habitat enhancement, habitat acquisition, and mitigation were necessary actions before proceeding with water development projects. The DEIS includes no information to indicate that any of these

activities have been completed, or even begun, with respect to the Project. These activities should be completed and then discussed in a new or supplemental EIS.

11. The DEIS fails to adequately describe and analyze the social and economic benefits and/or costs of the Narrows Project in northern Sanpete County.

If the Narrows Project is constructed, there will be a transbasin diversion of 5,400 acre-feet per year of water currently used in the Price River drainage, in Carbon County, to the San Pitch River drainage, in Sanpete County. Almost all of the diverted water will be used for the supplemental irrigation of lands that are already under production. Thus, the diverted water will not irrigate any new land. However, the transbasin diversion will affect the amounts of water currently used each year in Carbon County for a variety of agricultural, municipal, and industrial uses. The DEIS discussion of the potential economic benefits and impacts of this transbasin diversion in Sanpete County is either undocumented or based on out-dated information and thus, incomplete.

The discussion in the DEIS of possible economic benefits from the Project is unsupported by data and incomplete

The DEIS mentions that the economic benefit of the 480 acre-feet of Project water that would be used for lawn-watering would be approximately \$46,000 per year. It explains that "this benefit is based on foregone agricultural benefits that would be lost if irrigation water were converted to M&I use." See DEIS at 3-72. This rationale is confusing because it suggests that water used for supplemental irrigation has a higher value than water used for municipal and domestic uses.

The DEIS indicates that Project water would average about 0.3 acre-feet (or 4") per acre. The DEIS also indicates that approximately 248 families would use the supplemental irrigation water to harvest a third alfalfa crop each year for a net income increase of \$1,300 per family. This is estimated to increase annual net farm income in Sanpete County, in turn, by approximately \$322,400 per year, or by 11%. *Id.* However, the DEIS does not describe how these numbers were determined. Instead, it merely refers to a 1995 farm study. The DEIS further estimates that this water would cost approximately \$35.00 per acre foot, but acknowledges that the cost of the water to the 248 families cannot be accurately determined "until project financing has been secured and the project is completed." Further, the DEIS does not discuss the costs associated with the conservation measures it assumes will be implemented by these water users as a condition of receiving Project water. Consequently, the estimated annual benefits of the supplemental irrigation water are overestimated and inaccurate.

A rough estimate of the cost of this water, by itself, assuming that the \$ 17.3 million Project costs would be repaid at 0% interest over 50 years, is greater than \$ 60 per acre-foot, which is much higher than what most irrigators in Carbon County or Sanpete County currently pay, and can afford to pay, for water. The costs of the assumed conservation measures will further increase the actual cost of the water. In sum, the benefits and costs of the Project to water users in northern Sanpete County are incompletely presented in the DEIS. More financial

information concerning the Project should have been disclosed in the DEIS and is essential if an informed decision on the Project is to be made.

12. The DEIS violates NEPA by failing to analyze the impacts of the Project on Carbon County.

The federal regulations implementing NEPA are quite clear that an EIS must analyze both the direct (primary) and the indirect (secondary) effects of the proposed action. See 40 C.F.R. § 1502.16. The Bureau of Reclamation also emphasizes this requirement in its guidance document, which states in part:

Secondary impacts are frequently difficult to identify and measure; however, the secondary impacts that can reasonably be expected to occur, should Reclamation proceed with its proposal, would need to be addressed. For example, the impacts associated with the construction of a reservoir and the delivery of water may have some of the primary and secondary effects:

...

The secondary impacts generally are associated with the intended use of the water and include such things as economic and human population growth inducement, changes in land use (including associated fish and wildlife habitat changes), and potential industrial development. These impacts must be addressed to provide the decisionmaker with a clear understanding of the potential range of impacts associated with the proposal.

See United States Department of Interior Bureau of Reclamation, National Environmental Policy Act Handbook § 4-10.E (October 1990) (emphasis added). There is no such analysis in the DEIS even though it is obvious that the Project will have several significant impacts on Carbon County. In fact, the DEIS suggests that the transbasin diversion of water from Carbon County to Sanpete County will not have any significant effects in Carbon County, and concludes that no mitigation measures are necessary for the impacts that the DEIS identifies.

The DEIS fails to adequately analyze the social and economic costs of the Project to Carbon County.

The DEIS briefly discusses, without any analysis or supporting data, what appear to be conflicting estimates of the economic impacts to Carbon County that would be caused by the Narrows Project. As a result, it is difficult to determine how its estimates were reached or whether they are accurate. For example, page 3-72 of the DEIS states that the reduced water supply from Scofield Reservoir “would result in the loss of about \$31,000 of farm income per year in Carbon County.” Further, that for municipal and industrial water users to maintain their water supply at the same level in future as before construction of the Project, these water users would need to purchase 146 shares of Scofield water at a cost of \$146,000. Then, page 3-73 of the DEIS indicates that “decreased storage of Scofield Reservoir would cause a loss of \$22,000

of economic benefits per year to Carbon. There is no explanation in the DEIS of how these numbers were derived or the relationship among these identified economic impacts.

The above-referenced figures are conflicting and appear to greatly underestimate the economic impacts of reduced flows in the Price River system and the transferring of water from its present agricultural, municipal, and industrial uses in Carbon County. These costs will be quite significant, since water supplies in Carbon County are limited and fully appropriated. Any water shortage in releases from Scofield Reservoir will significantly impact agricultural water users. Primary crops that would have been previously irrigated will not be grown, causing losses in net income. Shortages would also impact municipal water use, restrict growth, and thwart fire protection in Price City, Helper City, and Wellington City. Finally, shortages will significantly impact industrial uses of water in Carbon County. At the public hearing on the DEIS in Price, Utah on April 22, 1998, a representative of Utah Power & Light stated that its Carbon Plant, which employs approximately 100 persons and has an operating budget of \$15-20 million, relies in part on water releases from Scofield Reservoir to operate and generate electricity. Consequently, water shortages could force the plant to shut down. Plant shutdowns are a real possibility, and almost occurred in 1992. In that year, releases from Scofield were insufficient to meet the needs of the Carbon Plant and UP&L was able to keep the Plant operating only by leasing 1800 acre-feet of water from local irrigators who agreed to not irrigate their fields.

The DEIS failure to thoroughly analyze the Project's impacts on Carbon is particularly egregious since the benefits of the Project to Sanpete County are so modest. Even though it is estimated to cost approximately \$17.3 million of public funds, the Narrows Project will only provide supplemental irrigation water. Further, it is estimated that the Project will only supply the equivalent of an extra 4" each year to 15,000 acres for a net gain of about \$1,300 each year for 248 families in the Project area. See DEIS at 3-81.

Balanced against these modest benefits are the several significant environmental and socioeconomic impacts in Carbon County that the DEIS acknowledges, but analyzes as if each impact is totally separate from the others. These impacts include taking land out of agricultural production, restricting growth and interfering with municipal water use in Price City, Helper City, and Wellington City, and impacting operations of the Carbon Plant. However, these are not separate impacts. The failure of the DEIS to analyze the cumulative effect of these and other impacts on stream flows, water quality, wetlands, fisheries, recreation, water availability, and agricultural, municipal, and industrial water use in Carbon County is a major flaw that requires further analysis.

However, rather than thoroughly analyzing the Project's wide-ranging impacts on Carbon County, the DEIS makes the following statements, which indicate that the Bureau has lost any objectivity that it may have at one time had concerning the Project and that the Bureau is incapable of taking the hard look at the Project that is required under NEPA:

The near doubling in size of Scofield Reservoir in 1946, allowing a full 35,000 acre-feet of additional active storage capacity, was originally accomplished for the purpose of implementing the Gooseberry Project Plan. Therefore, irrigation

systems in the Price River area are not expected to be any worse off than they would be without the enlarged reservoir.

See DEIS at 3-71. The DEIS also states:

Implementation of the Proposed Action would cause a reduction in the irrigation release from Scofield Reservoir by an average of 471 acre-feet per year which is about two percent of the average annual supply. However, this reduction is less than the 1,703 acre-feet per year average that would occur if Scofield Reservoir had not been enlarged and water right agreements executed to accommodate the Narrows Project.

See DEIS at 3-72. The DEIS also states:

Decreased storage of Scofield Reservoir would cause a loss of \$22,000 of economic benefits per year to Carbon County. However, the level of economic benefit due to recreation use of Scofield Reservoir would have been nearly \$97,000 less if the reservoir had not been enlarged to accommodate the Gooseberry Plan.

See DEIS at 3-73. Finally, the DEIS concludes that no mitigation measures are required in connection with the acknowledged Project impacts on Carbon County. The DEIS rationalizes this conclusion as follows:

There are no social mitigation measures proposed under the Proposed Action. The enlargement of Scofield Reservoir has already mitigated social and economic impacts on Carbon County.

See DEIS at 3-73. This argumentative rhetoric makes plain that the Bureau is incapable of conducting the neutral analysis of the Project that is required under NEPA. The language once again demonstrates that the DEIS is so biased that the only remedy for this violation of NEPA is the preparation of a new Draft EIS by a contractor that can perform the objective, disinterested analysis required under NEPA.

- 13. The DEIS relies on a model based on incomplete data to estimate certain of the Project's environmental impacts. Consequently, the DEIS reaches incorrect conclusions regarding these impacts.**

The heart of the DEIS is a water model used to estimate the impacts of the Narrows Project on stream flows, water quality, and fisheries, in lower Gooseberry and Scofield Reservoirs, and impacts to the Price River drainage. The model is a simulated reservoir operations study based on stream flow data collected from Gooseberry Creek near Fairview and near Scofield Reservoir for the years 1960 to 1992. The same water model was used in the original Draft EIS and Final EIS for the Project. See DEIS at 3-8 ("All studies are based on hydrologic data from 1960 to 1992 . . . these operation studies were originally prepared by

Franson and Noble . . .”, the SWCD’s original EIS contractors). The model estimates Project impacts by deducting the 5,400 acre-feet per year that would be removed from Gooseberry Creek by the transbasin diversion to Sanpete County. However, because the model is based on less accurate methods and significantly less than the total available data record, the conclusions based on the model are incorrect.

A reservoir operations study demonstrates that the water model used for the Draft EIS and the Final EIS is incomplete and underestimates the Project’s environmental impacts.

Robert J. Murdock, P.E., performed a reservoir operations study in the spring of 1994 to assess the accuracy of the water model used in the original Draft EIS and Final EIS. Consequently, the conclusions of Murdock’s study concerning the model used for the previous documents are equally applicable to the new DEIS. Murdock’s study is based on data for the time period from October 1, 1946 to September 30, 1993. The data is from records published by the United States Geological Service and it includes stream gauge records of flows in the Fairview Ditch and Tunnel, Gooseberry Creek near Scofield Reservoir, the Price River below Scofield Reservoir, and historic storage amounts in Scofield Reservoir. This data was supplemented with information from the Price River Commissioner Reports filed with the State Engineer’s Office in the Utah Division of Water Rights. In his study, Murdock assumed that the Narrows Reservoir was constructed and full as of 1946 to estimate its downstream impacts. Further, the Narrows Reservoir was assumed to have two different capacities -- 14,500 acre feet (as in the Preferred Plan in the DEIS), and 5,400 acre-feet (the smaller plan). Murdock’s data and conclusions are summarized on 9 tables showing the historic storage in Scofield Reservoir, how this storage would be affected by a Narrows Reservoir with active capacities of either 14,500 and 5,400 acre feet, the reductions in releases from Scofield that would be caused by the two different sized Narrows Reservoirs, and the effects of the different sized reservoirs on water releases to Cottonwood Canyon. The two documents summarizing Murdock’s study, dated March 18, 1994, and April 5, 1994, respectively, are attached as Exhibit “G” to these comments.

Because it is based on more data collected over a longer period of time, Murdock’s study is able to present a more accurate picture of the hydrology of the area and how it will be impacted by the Narrows Project. Murdock’s study reaches significantly different conclusions than the DEIS. For example, the DEIS estimates that a Narrows Reservoir with an active capacity of 14,500 acre-feet will cause an average reduction in historical water releases from Scofield Reservoir of 471 acre-feet per year. See DEIS at 3-15, 3-72. In contrast, Murdock’s study concludes that the average annual reduction in historical releases will be 1,627 acre-feet per year, a significant difference.

The DEIS estimates that operation of the Narrows Reservoir would cause reductions in the amount of irrigation water released from Scofield Reservoir, by being drained to the bottom of its active storage, in 9 of the 33 years simulated, a very significant impact. See DEIS at 3-13. Murdock concludes that reductions would occur in 14 of the 48 years studied, also approximately 30% of the time. Further, in several of these 14 years, the water shortages would have prevented a large portion of the actual releases from occurring. For example, in 1960, 15,714 acre-feet of water was released from Scofield -- under Murdock’s study, shortages would have prevented

7,134 acre-feet of this amount from being released. In 1961, 4,794 acre-feet was released from Scofield -- under Murdock's study, shortages would have prevented 2,452 acre-feet of this amount from being released. In 1977, 12,857 acre-feet was released from Scofield -- under Murdock's study, shortages would have prevented 10,866 acre-feet of this amount from being released. Finally, in 1992, 9,850 acre-feet was released from Scofield -- under Murdock's study, shortages would have prevented 7,087 acre-feet of this amount from being released.

Murdock's study also highlights that the DEIS underestimates the impacts of the Narrows Reservoir in assuming that it would be full starting in 1960, the first year in the DEIS model, since the Reservoir would not instantly fill with water. Consequently, those amounts of water "removed" from the drainage following construction of the Narrows Reservoir are not reflected in the estimated impacts.

As Murdock's study reveals, by ignoring readily available hydrological records concerning stream flows and reservoir storage, and focusing instead on less data for a limited period of time, the DEIS significantly underestimates the impacts of the Narrows Project on the quantity of water stored in and subsequently released from Scofield Reservoir. This is a critical error in the DEIS, and it is exacerbated by the fact that the Price River below Scofield is fully appropriated. The historic releases from Scofield into the Price River are already barely adequate to provide the water required for current agricultural, municipal, and industrial uses. Consequently, any reduction in the flows into or from the Scofield Reservoir will significantly and adversely impact these uses. Therefore, the nature of these impacts must be accurately determined before an informed decision concerning the Narrows Project can be made as required by NEPA.

14. **The DEIS fails to identify or address potential earthquake hazards in the proposed site for the Narrows Project and proposes design standards for the Narrows Dam that conflict with similar standards it recently imposed on Scofield Reservoir at a cost of over \$2 million.**

The DEIS fails to identify or address potential earthquake hazards in the proposed site for the Narrows Project and proposes design standards for the Narrows Dam that conflict with similar standards the Bureau recently applied, at a cost of over \$2 million, to Scofield Reservoir. Consequently, this discussion in the DEIS is flawed and incomplete and demonstrates that the Bureau has not taken a hard look at whether the Narrows Dam may be safely built as proposed in the DEIS.

The discussion in the DEIS on potential earthquake hazards in the vicinity of the Narrows Dam is almost identical to the discussion on this topic in the discredited Final EIS on the Project. As a result, it is very brief in discussing the possibility of an earthquake occurring in the vicinity of the Project, and how the Project would be designed to withstand such an event. It concludes that: "from a geoseismic standpoint, the recommended Narrows Damsite is suitable for construction." See DEIS at 3-92. The DEIS also states: "Geologic evaluation of the Wasatch Plateau indicates that existing faults are not active," but provides no information about who conducted such evaluation or what data was used in the evaluation. See DEIS at 3-89. It

acknowledges that three faults (the West Gooseberry Fault, the Fairview Lakes Fault, and the East Gooseberry Fault) have been mapped in the vicinity of the site of the Narrows Dam. It also acknowledges that the East Gooseberry Fault is only one mile to the east of the Project area but dismisses, without any analysis, the possibility that these faults may become active. Further, the DEIS indicates that the Project will be designed to withstand an earthquake with a magnitude of 5.5:

Faults which occur in the site vicinity are believed to be inactive. However, design of project facilities would be based on a "maximum credible earthquake" (MCE). Preliminary studies indicate that the appropriate MCE would be of a magnitude of 5.5. Further review of the appropriate MCE would be performed prior to the final design of the dam.

See DEIS at 3-92 (emphasis added). These conclusions in the DEIS are very different than those relied on by the Bureau in recently expending over \$2 million to reconstruct the foundation of Scofield Dam, approximately 17 miles away, because of the Bureau's concerns about possible earthquake activity in the area with a magnitude that would far exceed the MCE of 5.5 referred to in the DEIS.

Specifically, there are a number Bureau studies in connection with Scofield Dam indicating that the Bureau believed that an earthquake with a MCE of up to a 7.5 magnitude was possible in the area. These studies include: (1) Bureau of Reclamation, Division of Design, Technical Memorandum No. SO-222-1, Analyses of Geotechnical Concerns of Scofield Dam from the Safety Evaluation of Existing Dams Report (October 1983); (2)) Bureau of Reclamation, Division of Design, Technical Memorandum No. SAR-1632-8, Seismotectonic Analysis for SEED [Safety Evaluation of Existing Dams] Report (February 21, 1984); (3) Bureau of Reclamation, Division of Geotechnical Engineering and Geology Division, Decision Memorandum No. SC-3620-1, Modification Decision Analysis (July 19, 1990); (4) Bureau of Reclamation, Geotechnical Engineering and Geology Division, Technical Memorandum No. FD-3620-1, Evaluation of Structural Modification Alternatives for Scofield Dam (September 16, 1992); and (5) Bureau of Reclamation, Safety of Dams Program, Scofield Dam Modification Report (June 1995).

The Bureau's Technical Memorandum No. SO-222-1 (October 1983) identified the following MCEs for the area near Scofield Dam:

<u>Tectonic Structure</u>	<u>MCE</u>	<u>Epicentral distance (km)</u>
Wasatch Fault	7.5	60
Pleasant Valley Graben	7	1
Intermountain Seismic Belt	5	0

Further, the Bureau's Technical Memorandum No. SAR-1632-8 (February 21, 1984) identified three major faults near Scofield Dam: (1) the Pleasant Valley Fault zone; (2) the North Gordon Fault Zone; and (3) the Joes Valley fault zone. Among other things, this Technical

Memorandum indicated that the Pleasant Valley fault zone is 5 to 8 kilometers wide and extends from north of Fish Creek (which is where Scofield Dam is located) approximately 55 kilometers to the south. Further, the Pleasant Valley Fault was estimated to have a MCE of a 6.5 to 7 magnitude with an epicentral distance of 1.2 kilometers. The Bureau's memorandum also estimated a 7 to 7.5 MCE for the Joes Valley Fault with an epicentral distance of 23 kilometers, and a MCE of 7.5 for the Wasatch Fault with an epicentral distance of sixty kilometers.

The Bureau's Decision Memorandum No. SC-3620-1 (July 19, 1990) identified a MCE of 6.5 for the site of Scofield Dam, a MCE of 7.5 for the Pleasant Valley Fault at a distance of 1.3 km, and a MCE for the Joes Valley Fault at a distance of 22 km. The Bureau's Technical Memorandum No. FD-3620-1 made the same findings, and specifically recognized the liquefaction potential from a possible MCE of a 7.0 magnitude from the Pleasant Valley Fault zone at a distance of 1.3 km. The same potential MCEs are identified in the Bureau's June 1995 Safety of Dams Modification Report.

The result of the above-referenced studies was that the Bureau required significant construction work on the foundation of Scofield Dam, at a cost of over \$2 million, to withstand an earthquake with a MCE of 6.5 at the Scofield Dam site, of 7.0 at the Pleasant Valley Fault zone, and of 7.5 at the Joes Valley Fault zone.

In light of the above-referenced studies undertaken by the Bureau, as well as its requiring significant reconstruction of the foundation of Scofield Dam to withstand nearby earthquakes with MCEs of up to 7.5, the statements in the DEIS that "faults which occur in the site are believed to be inactive," and that the Narrows Dam would only need to be designed to withstand a MCE of a 5.5 magnitude conflict with the Bureau's own existing data. These statements also underscore that the Bureau has failed to take the objective, hard look at the Narrows Project that is required under NEPA.

Further, the DEIS fails to include any data that would indicate that a hard look has been taken concerning the actual construction of the Narrows Dam, or that adequate materials exist within reasonable haul distances to build the dam. There are no drill logs, no test pit logs, no water tests of drill holes, no soil tests, and no water table data for the damsite or reservoir basin. Further, the DEIS fails to indicate whether a detailed surface geology study of the damsite has even been made. It does state that the proposed damsite is located on the North Horn formation. See DEIS at 3-89. This is the same formation on which 104 landslides in nearby Cottonwood Canyon have occurred. Further, the North Horn formation is well-recognized as being involved in landslides and instability throughout the Wasatch Plateau. However, the DEIS never provides any information to indicate that a dam can be safely built upon the proposed Narrows damsite. Instead, without providing any more details, the DEIS simply indicates that "a geologic study performed by the SWCD indicates that there is low potential for reservoir-induced landslide activity in the reservoir basin." See DEIS at 3-89.

15. The DEIS fails to address the effect of the Project caused depletions to the Colorado River on the Salinity Control Project for the Price and San Rafael Rivers.

Page 1-13 of the DEIS indicates that the Narrows Project would operate in cooperation with a number of existing projects including, among others, the Price-San Rafael Unit, Colorado Salinity Control Program. Page 1-13 also indicates that the purpose of the Salinity Control Project is to reduce salt contribution to the Colorado River system by about 161,000 tons per year. Elsewhere, the DEIS states that the Narrows Project will cause depletions to the Colorado River system of 5,709 acre-feet per year. It appears that one effect of such depletion would be to reduce the amount of water in the River system that would be available to dilute salts that would be contributed to the River system, thus conflicting with the goals of the Salinity Control Program. Since the DEIS raised the issue of its relationship to the Salinity Control Program, the DEIS should have discussed whether Narrows Project depletions would conflict with the goals of the Salinity Control Program and, if so, proposed mitigation measures that might resolve such conflict.

16. The DEIS fails to reconcile the obvious conflict between the Narrows Project and the policies of the State of Utah concerning water conservation and water projects.

Under 40 C.F.R. § 1502.16(c), the DEIS should have discussed the possible conflict between the proposed Project and the following State of Utah policies on water conservation:

The state supports and promotes the conservation and wise use of all water for all beneficial purposes. Water conservation will be given proper and careful consideration in feasibility investigations at all levels and for all projects. It will be examined as both a supplement and an alternative to project proposals. Sponsors for irrigation projects are encouraged to prepare a conservation plan approved by the local soil conservation district. Sponsors for culinary projects are encouraged to design a conservation plan to be approved by the presiding official of the community or district to be served by the project. All project sponsors will be advised to seek assistance from appropriate individuals or organizations to help develop the conservation plan and implement applicable conservation practices and programs for their water projects.

See State of Utah Department of Natural Resources, Division of Water Resources, Utah State Water Plan at 17-1 (January 1990) (quoting 1982 policy of Utah Division of Water Resources) (emphasis added); see also Utah Division of Water Resources, The Utah Water Data Book 13 (December 1997) ("Conservation should play an important role in meeting Utah's future water demands. Stretching existing water supplies is less expensive and the right thing to do. Water suppliers should implement a strong water conservation program to make their already developed supplies go further."); Utah Code Ann. § 73-10-32 (requiring water conservancy districts and other water retailers to develop water conservation plans concerning water that is used for domestic and culinary use to conserve water and reduce per capita consumption).

The above-referenced statement make clear that the policy of the State of Utah is for water conservation to be examined “at all levels and for all projects” and “as both a supplement and an alternative to project proposals.” As described in the DEIS, the proposed Narrows Project plainly conflicts with this policy. The failure of the DEIS to discuss this conflict between the Project and the policies of the State of Utah is another example of the failure of the DEIS to comply with the requirements of NEPA. The conflict between the Narrows Project and the policy of the State of Utah on water conservation is another indication that the Project is contrary to the public interest and should not be built. Consequently, the § 404 Application should be denied.

17. The DEIS fails to reconcile the obvious conflict between the Narrows Project and the new policies of the Bureau of Reclamation concerning new water projects.

In its Blueprint for Reform: The Commissioner’s Plan for Reinventing Reclamation (November 1, 1993), the Commissioner of the Bureau of Reclamation adopted general principles, including the following:

- We will facilitate changes from current to new uses of water in accordance with state law when such changes increase benefits to society and the environment.
- We will encourage conservation and improvements in the efficiency of use of already developed water and hydroelectric supplies.
- We will promote the sustainable use of the water and associated land resources in an environmentally sensitive manner throughout the 17 Western States.
- We will facilitate integrated water resources management on a watershed basis, stressing interagency cooperation, public participation, and local implementation.

In addition, the Commissioner’s Plan states that “promoting conservation will be given priority in our program activities,” and that “[f]ederally-funded irrigation water supply projects will not be initiated in the future.”

As outlined in the DEIS, the Narrows Project clearly violates these guidelines. The Project’s benefits to society are questionable, particularly since its impacts have not been identified and adequately analyzed. It is a transbasin diversion that does not provide new water or result in new lands being placed into production. Instead, it removes water from existing high-value beneficial uses, including support of wetlands and a high quality trout fishery, and moves it to supplemental irrigation, a low-value use. The Project would be environmentally destructive. It does not facilitate integrated water resources management on a watershed basis. Nor does it promote conservation. In fact, the DEIS failed to discuss, in any meaningful way, the role of conservation in advocating the Project.

The failure of the DEIS to address the Bureau’s policy favoring conservation measures is contrary to the requirement of the CEQ regulations that an EIS discuss “possible conflicts

between the proposed action and the objectives of Federal, regional, State, and local . . . policies.” See 40 C.F.R. § 1502.16(c). Current Bureau policy clearly favors conservation over development of costly new storage and delivery projects. The DEIS should have acknowledged and addressed the Bureau’s policy and the conflict that exists between the proposed action and that policy. The conflict between the Narrows Project and the Bureau’s policy is another indication that the Project is contrary to the public interest. The Carbon Water Committee believes that the sensible way to resolve this conflict is to not build the Project. Consequently, the § 404 Application should be denied.

CONCLUSION

The DEIS is biased, fundamentally flawed and does not comply with the goals and requirements of NEPA, the § 404(b)(1) guidelines, or current policies of the State of Utah and the Bureau of Reclamation. The DEIS fails to identify and analyze a range of reasonable and practicable alternatives to the Project, including the most obvious practicable alternative of water conservation. The DEIS also fails to adequately identify and analyze potential impacts of the Project on wetlands, stream flows, water quality, aquatic and reservoir fisheries, and agricultural, municipal, and industrial water use in the Price River system. The proposed Narrows Project makes no sense. It is estimated to cost \$17.3 million of public funds, but it will not result in any new land being put into production. In addition, it is a transbasin diversion that will move water from existing high-value beneficial uses to supplemental irrigation, a low-value use. The Project would be environmentally destructive and would adversely impact agricultural, municipal, and industrial water users in the Price River system. The Project might bring modest benefits to those irrigators in northern Sanpete County who would be able to grow a third crop of alfalfa or hay with Project water. These modest benefits are far outweighed by the Project’s fiscal, environmental, and socioeconomic costs. Consequently, the Project is contrary to the public interest and the § 404 Application should be denied.

Sincerely,

Neil Brienholt, by JEK

Neil Brienholt
Vice-Chairman, Carbon Water Committee

Comparison Between 1998 DEIS and 2010 SDEIS Regarding Comments Submitted in 1998 ("DEIS Comments")

	DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
51-56	1. DEIS fails to establish a need for the project. (page 4)		1-5	1-6	The 1998 comment carries forward and was not addressed in the SDEIS.
		Fails to establish need for additional agricultural water in northern Sanpete County. (page 4)	1-9	1-10	The 1998 comment carries forward. While there was some updating of charts and data in the SDEIS, the fundamental substance of the analysis remains the same and the 7 types of information requested on page 5 of the 1998 Comments were not included in the SDEIS.
		Fails to establish a need for additional municipal water in northern Sanpete County. (page 5)	1-6	1-7	The 1998 comment carries forward and was not addressed in the SDEIS. While there was some updating of charts and data, the fundamental substance of the analysis remains the same and the 8 types of information requested on page 6 of the 1998 Comments were not included in the SDEIS.
		Fails to establish a need for additional recreational facilities (and fishery opportunities). (page 7)	1-12	1-16	The 1998 comment carries forward and was not addressed in the SDEIS.
51-57	2. DEIS fails to analyze and discuss reasonable alternatives. The DEIS violates the "practicable alternatives" requirement of 404(b)(1) guidelines. (page 9)		2-1	2-1	The 1998 comment carries forward and was not addressed in the SDEIS. For example, our original comment included an objection to the selection criteria (DEIS 2-1) because they artificially constrained the possible alternatives. However, the same selection criteria are included in the SDEIS with the exception of the 5 th criterion that originally required the project divert and store water under legal claim of right and priority. In addition, although the SDEIS now includes an additional alternative—the mid-size reservoir—the alternatives analysis is still inadequate for all of the reasons originally raised in our comments on the 1998 DEIS. See also additional comments specific to the SDEIS attached hereto.
		Fails to analyze conservation measures as a reasonable alternative. (page 14)	2-46	2-47	The text of the SDEIS was revised and includes more discussion about current efficiency improvements, however, the 1998 comment carries forward and was not addressed in the SDEIS.

DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
	Fails to study the development of existing groundwater as a reasonable alternative. (page 21)	2-51	2-56	The 1998 comment carries forward and was not addressed in the SDEIS. The only apparent difference between the SDEIS and the DEIS with respect to this issue is that the SDEIS now includes a citation to the State Engineer's policy memorandum that explains the Sevier River Basin was closed to all new appropriations.
	Fails to study use of water from CUP or funding pursuant to Sections 206 and/or 207 of the CUP Completion Act. (page 21)	2-52	2-57	The 1998 comment carries forward and was not addressed in the SDEIS. In particular, our request for clarification as to why Sanpete County would continue to pay taxes to CUWCD when CUWCD allegedly has discontinued any plan to deliver water to Sanpete County is not addressed in the SDEIS.
	Fails to study the alternative of retiring irrigated land. (page 22)	2-53	2-58	While there is now more discussion in the SDEIS on this alternative, the 1998 comment included a calculation to show that 2,536 acres of irrigated land would need to be retired to meet the irrigation needs of the project. The SDEIS was revised and appears to incorporate a similar calculation but relies on different values than those included in the 1998 comment, thus concluding that 2,760 acres of land (not 2,536 acres) would need to be retired from irrigation. See SDEIS at 2-58. The agency must explain this difference. In addition, the SDEIS dismisses this alternative by concluding that it requires willing sellers and buyers but there is little indication that local farmers are willing to forego farming on 20% of their land. See SDEIS at 2-59. Yet, in other sections of the SDEIS, including the wetlands mitigation analysis, willing buyers and sellers will also be necessary to effectuate the mitigation measure and there are no guarantees or representations that interested parties exist. Nonetheless, the Bureau concludes these mitigation measures are still valid.
	Fails to study not growing a third crop of hay each year. (page 23)			The 1998 comment carries forward and was not addressed in the SDEIS.
	Fails to study combining conservation measures, retirement of irrigated land, and/or not growing a third crop of hay. (page 23)			The 1998 comment carries forward and was not addressed in the SDEIS.

51-58

DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
3. The § 404 Application and the DEIS fail to adequately identify the wetlands that would be impacted by the Narrows Project and the functions and values of such wetlands, and proposes questionable mitigation measures. (page 24)				The 1998 comment carries forward and was not addressed in the SDEIS.
	DEIS illegally restricts the scope of its assessment of what wetlands would be impacted by the Project. (page 25)	3-50	3-62	The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments specific to the SDEIS attached hereto.
	DEIS relies on an expired wetlands delineation to identify wetlands within the reservoir basin of the Narrows Project that would be affected by construction of the Narrows Reservoir. (page 25)	3-50	3-63	See additional comments specific to the SDEIS attached hereto.
	DEIS and § 404 Application state 100 acres of wetlands will be flooded by the reservoir but this is inconsistent with the 1992 study that identifies approximately 140 acres of impacted wetlands. (page 26)	3-53	3-63	See additional comments specific to the SDEIS attached hereto.

DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
	DEIS fails to identify the functions and values of the impacted wetlands. (page 26)	3-50	3-62 through 3-65	See additional comments specific to the SDEIS attached hereto.
	DEIS fails to identify wetlands in the vicinity of the Narrows Basin that would be affected by development and recreation in connection with the Narrows Reservoir. (page 27)	3-50	3-62	See additional comments specific to the SDEIS attached hereto.
	DEIS fails to identify wetlands and aquatic resources outside the Narrows Basin that would be affected by the project. (page 28)	3-50 <i>et seq.</i>	3-62 <i>et seq.</i>	See additional comments specific to the SDEIS attached hereto.
51-59 4. The § 404 Application and DEIS fail to adequately discuss measures that may be taken to mitigate impacts to those wetlands identified in the DEIS as being adversely impacted. (page 30)				The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments specific to the SDEIS attached hereto.
	The DEIS discussion on the four sites for possible mitigation of adverse impacts to wetlands is confusing and inconsistent. (page 31)	2-34 (wetland measures) and 3-50 (wetlands resources)	2-22 (wetland measures) and 3-63 (wetlands resources)	The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments specific to the SDEIS attached hereto.

	DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
		The proposed mitigation measures do not follow the sequencing required under EPA and Corps policies. (page 32)	2-34 (wetland measures) and 3-50 (wetlands resources)	2-22 (wetland measures) and 3-63 (wetlands resources)	The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments specific to the SDEIS attached hereto.
		Proposed mitigation fails to take into account wetland values and functions. (page 33-41)	2-34	2-22 through 2-27	The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments specific to the SDEIS attached hereto.
51-60	5. DEIS acknowledges the Project will adversely impact water quality but fails to propose specific measures to mitigate these impacts. (page 42)		3-37	3-41	The 1998 comment carries forward and was not addressed in the SDEIS. For instance, the 1998 comment suggested that the water quality section was overly broad. See for example DEIS at 3-49 (stating that the channel in Middle Gooseberry Creek would be narrowed and reduced flows in middle Gooseberry would occur but this process would be expedited through utilization of "certain man-made improvements." There is no description of what these "improvements" include). The overly broad descriptions included in the DEIS are also present in the SDEIS. For example, the SDEIS generally provides that a "contractor would be required to comply with applicable Federal and State laws, orders, and regulations concerning the control and abatement of water pollution" but there is no further detail as to what this actually means. See SDEIS at 3-55.
		Narrowing the channel of middle Gooseberry Creek is not an effective measure. (page 42)	3-49	3-60	The 1998 comment carries forward and was not addressed in the SDEIS.
51-61		The second mitigation measure, proposed to reduce phosphorous loading in Scofield Reservoir, is too vague and likely not effective. (page 43)	3-49	3-60	The 1998 comment carries forward and was not addressed in the SDEIS. For example, the 1998 comment noted that the DEIS failed to discuss the potential costs of purchasing and managing this property, including the costs associated with installing 9.5 miles of fencing. Likewise, in the SDEIS there is still no analysis of costs or any response to the 1998 comment.

	DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
51-62		The probability and effectiveness of all proposed mitigation measures should have been discussed. (page 44)	3-49	3-59	The 1998 comment carries forward and was not addressed in the SDEIS.
51-63		Health concerns related to impaired water quality in Scofield Reservoir. (page 45)			The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments specific to the SDEIS attached hereto.
51-64	6. DEIS acknowledges the Project will degrade and destroy spawning habitat for cutthroat and rainbow trout but fails to explain how this loss will be mitigated. (page 46)		Table 3-11	Table 3-11	The 1998 comment carries forward and was not addressed in the SDEIS. It appears the only difference between Table 3-11 in the DEIS as compared to the Table in the SDEIS is an additional commitment that provides that an average of 300 acre-feet of additional water will be released into Gooseberry Creek for flushing flows and replenishing oxygen content in Lower Gooseberry Reservoir. The SDEIS needs to explain where this water will come from and why this would be an effective measure when the impacts to fisheries listed in the Table does not identify oxygen depletion as an issue. In addition, none of the mitigation strategies include any analysis on cost or effectiveness of implementing and monitoring these measures.
51-65	7. DEIS acknowledges that the Project will have adverse impacts to fisheries and recreational use in Scofield Reservoir, but fails to discuss measures to mitigate these impacts. (page 49)		3-35 and 3-60	3-40 and 3-73	The 1998 comment carries forward and was not addressed in the SDEIS. In addition, the SDEIS acknowledges that 237 acres of "Roaded Natural" dispersed recreation will be lost and 466 acres would be lost on private lands (see SDEIS at 3-76) but there is no discussion about how these impacts will be mitigated, especially those on private lands since SWCD does not have authority to condemn these properties. The only explanation with respect to "mitigation" is an unsupported statement that these impacts will be offset by the new facilities to be constructed at the proposed reservoir. See SDEIS at 3-76. This does not meet the "hard look" standard with respect to these impacts. Moreover, the SDEIS provides no discussion on the mitigation measures necessary to address these particular impacts.

	DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
51-66	8. The DEIS's suggestion that impacts to Scofield Reservoir would be somehow mitigated by recreational use of the Narrows Reservoir is wrong and is likely based on an incorrect assumption concerning the amount of water that would be stored in the Narrows Reservoir. (page 51)		3-63	3-76	The 1998 comment carries forward and was not addressed in the SDEIS.
51-67	9. DEIS should not have been released before completion of the amended Biological Opinion ("BO") analyzing potential impacts of the Project on the endangered CO Squawfish. (page 52)		3-3	3-4	The B.O. was issued in 2000, thus, in part addressing the 1998 comment. However, the SDEIS states that further study is now required to determine the extent the pikeminnow uses the Price River because the Project will result in depletion of water in the Price River. Yet, even though the SDEIS acknowledges that it cannot draw conclusions about the importance of the Price River until that research is concluded, the agency commits resources in advance of that additional research. See SDEIS at 3-4 to 3-5. In addition, the SDEIS references the Recovery Program's directive to study seasonal endangered fish use in the Price River and to develop recommendations for year-round instream flow requirements in the Price River for Colorado pikeminnow. SDEIS at 3-4. It also states that field investigations were completed and approved during 2009. This information should be included in the SDEIS and incorporated into the analysis of the Threatened and Endangered Species section. Finally, the SDEIS should also include a status report and evaluation of the effectiveness of the RIP as briefly mentioned in this section. See SDEIS at 3-4.
51-68	10. DEIS does not comply with the requirements of the January 22, 1998 Conservation Agreement concerning the spotted frog. (page 53)			3-3	The SDEIS now provides that the Bureau and SWCD will cooperate in implementing the conservation measures set forth in the Spotted Frog Conservation Agreement but it provides no further explanation as to what these conservation measures will include, how they may impact the proposed action, and what mitigation measures will be taken to conform to this agreement, let alone the costs of doing so.

	DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
51-69	11. The DEIS fails to adequately describe and analyze the social and economic benefits and/or costs of the Narrows Project in northern Sanpete County. (page 54)		3-68	3-82	The 1998 comment carries forward and was not addressed in the SDEIS. See below.
51-70	12. DEIS fails to analyze impacts on Carbon County. (page 55)		3-68	3-82	The 1998 comment carries forward and was not addressed in the SDEIS. Indeed, the SDEIS does not even include an analysis of the economic impacts for the Proposed Action versus the anticipated impacts for each alternative, including the no action alternative. Instead, the SDEIS only provides a cursory "regional impact analysis." The SDEIS Economic and Social Resources section does not even come close to meeting the "hard look" threshold required under NEPA. For example, there is not attempt to evaluate the economic impacts on Carbon County due to the water depletions it will experience. There is no discussion about the value of the third crop of hay and what the impacts might be if this crop is not grown versus those impacts if it is grown. The total lack of any economic and social impacts analysis violates NEPA.
51-71	13. The DEIS relies on a model based on incomplete data to estimate certain of the Project's environmental impacts. Consequently, DEIS reaches incorrect conclusions regarding these impacts. (page 57)		3-8	3-11	The 1998 comment carries forward and was not addressed in the SDEIS. In fact, the Murdock study referenced in the 1998 comments is not discussed or addressed in the SDEIS at all.

	DEIS Comment	Sub-Comment	1998 DEIS Page	2010 SDEIS Page	Other
51-72	14. DEIS fails to identify or address potential earthquake hazards in the proposed site for the Narrows Project and proposes design standards for the Narrows Dam that conflict with similar standards it recently imposed on Scofield Reservoir at a cost of over \$2 million. (page 59)		3-88	3-101	The 1998 comment carries forward and was not addressed in the SDEIS. See additional comments submitted on the SDEIS attached hereto.
51-73	15. The DEIS fails to address the effect of the Project caused depletions to the CO River on the Salinity Control Project for the Price and San Rafael Rivers. (page 62)		1-13	1-19	Text has been added to the SDEIS stating "[t]he Price-San Rafael Rivers Unit more than compensates for the trans-basin diversion of 5,400 acre-feet under the Narrows Project." However, the SDEIS still provides no explanation as to how this trans-basin diversion will affect the efforts to reduce salt contribution to the Colorado River by nearly 161,000 tons annually.
	16. The DEIS fails to reconcile the obvious conflict between the Narrows Project and the Policies of the State of Utah concerning water conservation and water projects. (page 62)				The 1998 comment carries forward and was not addressed in the SDEIS.
	17. DEIS fails to reconcile the obvious conflict between the Narrows Project and the new policies of the Bureau of Reclamation concerning new water projects. (page 63)				The 1998 comment carries forward and was not addressed in the SDEIS.



Section 3 NARROWS PROJECT ALTERNATIVE

51-74 Date: May 29, 2010

Project No.: 093-93384

To: Richard Lee

Company: Carbon Water Conservancy District

From: Michael Brown, Principal Engineer
Bob Long, Senior Hydrogeologist
Steven Humphrey, Staff Hydrogeologist

RE: PRE-FEASIBILITY STUDY OF A MANAGED AQUIFER RECHARGE PROJECT FOR SANPETE COUNTY

1.0 EXECUTIVE SUMMARY

In March 2010 the Bureau of Reclamation (USBR) released the *Narrows Project Supplemental Draft Environmental Impact Statement Narrows Project, Sanpete County, Utah* (SDEIS). This document describes a proposed project consisting of a new water storage reservoir in the upper Gooseberry Creek drainage basin (the Narrows) that would deliver water to the Narrows Tunnel. The proposed Narrows Reservoir would store snowmelt runoff from the high altitude Gooseberry Creek basin. Up to 5,400 AF per year of the stored water would be diverted through the Narrows Tunnel to Sanpete County via Cottonwood Creek primarily for late season irrigation. Water would be diverted from Cottonwood Creek for distribution to local water users.

The SDEIS evaluated and then discarded several alternatives to the proposed action including the development of a Managed Aquifer Recharge (MAR) system. The MAR system would include storage of water from the Gooseberry Basin in an aquifer followed by extraction of the water via wells, in response to demand. Recharge would be achieved using either injection wells or a series of shallow infiltration basins. The USBR eliminated the MAR option based on unsubstantiated technical challenges.

Golder reviewed the USBR's evaluation of the potential for development of a MAR system, which is based primarily on the referenced *Update to the Sanpete County Master Plan* (CH2M Hill, 2008)(Sanpete Update). Golder's review was based on 1) a site visit conducted in October 2009 by Michael Brown and other Golder staff, 2) the SDEIS, 3) the Sanpete Update and 4) many additional documents describing the hydrogeology of the Sanpete Valley as itemized in the references, Section 4.0.

The Sanpete Update contains no cost analysis for a MAR project but does present findings that the option meets the purpose and need of the SDEIS. While our findings concur with those of CH2M Hill in the Sanpete Update that an MAR system could meet the purpose and needs statement of the Narrows SDEIS, we differ with other conclusions and believe that rejection of an MAR system as a potential reasonable alternative was not justified.

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Golder's review of the hydrogeologic information from the area suggests that infiltration to the aquifer is possible and that adequate storage volumes are available within near-surface aquifers to meet the needs of the project. We agree that the financial feasibility of an MAR system that relies on injection wells for recharge may be questionable due to water treatment costs, although a direct evaluation of these cost estimates was not possible because the USBR did not provide a reference to a document that presented MAR system cost analysis or technical water quality or hydrogeologic data evaluations that could lead to these conclusions. Golder's review of local Sanpete Valley hydrogeologic conditions and an assessment of several operating MAR systems in the Southwest that utilize infiltration basins for recharge indicates that a MAR system using infiltration basins appears both feasible and cost effective as an alternative to the proposed Narrows Reservoir Project. Geologic and hydrogeologic information published by the USGS and local water supply well data indicate that the near-surface aquifer near the mouth of Cottonwood Creek, and throughout the northeastern portion of the Sanpete Valley, is hydraulically connected to the deeper aquifer system and does have the capacity to store at least 6,000 acre-feet of water (Robinson, 1971). Water stored in this aquifer unit could be extracted using selected existing wells and new wells for use in late summer irrigation.

Golder reviewed several successful MAR projects in the southwestern U.S. to assess the feasibility of applying similar technology in Sanpete County. The following projects were reviewed from website content, personal communication and published documents:

- Weber Basin – Ogden, Utah (Weber Basin Water Conservancy District (WBWCD), 2010; Rasmussen, pers. comm., 2010; Lowe and others, 2003)
- Sand Hollow Reservoir MAR – Washington County, Utah (Heilweil and others, 2009)
- Avra Valley – Central Arizona Project (Central Arizona Project (CAP), 2010)
- Pima Mine Road – Central Arizona Project (CAP, 2010)
- Lower Santa Cruz – Central Arizona Project (CAP, 2010)
- Aqua Fria – Central Arizona Project (CAP, 2010)
- Hieroglyphic Mountains – Central Arizona Project (CAP, 2010; Harrison, pers. comm., 2010)
- Tonopah Desert – Central Arizona Project (CAP, 2010) Sweetwater Facilities – Tucson, Arizona (Kmiec and Thomure, 2007)
- Vidler Recharge Facility – Harquahala Valley, Arizona (Bushner, 2008)
- Orange County Water District – Orange County, California (Orange County Water District (OCWD), 2008)

A MAR project that meets the Narrows Project objectives would need to store water that is diverted directly from the upper Gooseberry Creek basin. This water would be delivered through the Narrows tunnel at an average rate of approximately 50 cfs for two months. After flowing down Cottonwood Creek it would be infiltrated into the alluvial fan deposits along the margin of the San Pitch river valley at approximately the same rate. Assessment of information from published geologic reports indicates that a

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storage volume of at least 6,000 acre-feet would be available for recharge via infiltration basins. This water would then be withdrawn to meet demands using existing and/or new wells. The scale of such a MAR facility in Sanpete County would be comparable to many existing successful recharge projects in the Southwest.

In addition, the MAR option provides the following additional benefits:

- Narrows Dam and Reservoir would not be required and mitigation for impacts of those facilities would not be necessary.
- A reduction in environmental impact to riparian habitat that will be incurred by the construction of the dam and inundation of streams in the upper Gooseberry Creek drainage basin.
- Increased water for natural streams and rivers within the Sanpete Valley riparian areas due to the State Engineer's requirement that some percentage of infiltration waters remain in the aquifer system as a natural resource buffer.
- A significant reduction in evaporative losses when compared to holding water in a reservoir year round.
- Less cost for construction than a Narrows Large Reservoir option.

Based on our review of existing MAR projects, the alternative action of a MAR project using infiltration basins to recharge an aquifer meets the purpose and need for the Narrows Dam Project, is practicable in construction and operation, is a proven technology and has additional environmental and economic benefits.

Below we first outline our assessment of the technical feasibility and a cost estimate of an MAR system as an alternative to the Narrows Project, followed by point-by-point rebuttal to the reasons given in the SDEIS for rejection of the MARS alternative.

2.0 REVIEW OF MAR FEASIBILITY AND COST ESTIMATE

Golder reviewed published data on the stream flow, climate, geologic setting, and hydrogeology of the Sanpete Valley. Geologic maps and area well logs were reviewed to help assess the feasibility of constructing and operating a series of infiltration basins to capture, recharge and store spring snowmelt waters in an aquifer. Climatic records were reviewed to assess relative evaporation rates for the proposed Narrows Large Reservoir project and the MAR alternative.

2.1 MAR Feasibility

USGS gage stream flow data indicate that peak flow rates for Gooseberry Creek occur from late April through early July, primarily as a result of snowmelt. Peak flow rates range from approximately 60 cfs to 114 cfs for a wet year and from approximately 5 cfs to 18 cfs for a dry year (CH2M Hill, 2008). In an average year, peak flow rates range from approximately 30 cfs to 70 cfs. The water required for the alternative recharge project consists of the water available from the upper drainages of the Gooseberry

Creek. Diversion features would need to be constructed to capture and transfer an average flow rate of 50 cfs to the Cottonwood Creek via the Narrows Tunnel. The diversion configuration would be similar to those identified in the SDEIS, Section 2.3.1, Direct Diversion without Reservoir.

If natural stream flow is available diversion up to the water right of 5,400 acre-feet could be achieved by diverting approximately 50 cfs through the Narrows Tunnel for approximately 54 days. Operation studies done in support of the SDEIS (Section 2.3.2), indicate that such a system would divert 4,671 acre-feet per year, on average. This water would then be conveyed via the proposed East Bench Pipeline from the mouth of the Cottonwood Creek Canyon to series of infiltration basins in the northeastern Sanpete Valley. Assuming the State Engineer allows 90% of the stored water to be recovered (typical of most recharge systems), then 4,203 acre-feet would be available for groundwater withdrawal, which would enable Sanpete Water Conservancy District (SWCD) to develop a late season irrigation and a municipal & industrial (M&I) water supply source for water users in North Sanpete County. New and existing groundwater wells within the northeastern Sanpete Valley would be utilized to withdrawal the 4,203 acre-feet of groundwater in the latter part of the irrigation season. Careful placement of the infiltration basins and recovery wells would avoid impacts to existing groundwater users. The remaining 10 percent (467 acre-feet) would be captured by non-project existing wells, or it would be lost and likely contribute to low flows in the San Pitch River.

The design and size of infiltration basins would depend on the site-specific hydrogeologic conditions and in particular the infiltration rates and depth to groundwater within the alluvial fan deposits of the northern Sanpete Valley. A hydrogeologic investigation and pilot recharge test would be required to determine the subsurface conditions at each basin location and finalize the design of the infiltration basin facility. In the pilot test the natural treatment of the infiltrating water by the soils/geology through which it passes would also be evaluated to ensure that the infiltrating waters will meet appropriate standards. This is a typical procedure in infiltration basin design, and is the approach that was followed for the Weber Basin project in Utah.

The ideal hydrogeologic setting for the recharge facilities (infiltration basins) would be located on the alluvial fan deposits at the base of the Wasatch Plateau in northeast Sanpete Valley. The alluvial fan deposits consist of unconsolidated to semi-consolidated clay, silt, sand, gravel, cobbles and boulders up to 350 feet thick in areas east of Mount Pleasant, coarsening toward the base of the Wasatch Plateau (Robinson, 1971). The aquifer within the alluvial fan deposits in the northeastern portion of the Sanpete Valley is unconfined and the depth to water can range from 10 to 30 feet near the San Pitch River to approximately 100 feet within the alluvial fans to the east. Transmissivity values for the alluvial fan deposits can range from approximately 13,000 gpd/ft to 1,250,000 gpd/ft (1,000 to 20,000 ft²/day), based on ten aquifer tests and specific capacity data from more than 40 wells (Robinson, 1971). Groundwater flow directions in the northeastern Sanpete Valley are primarily westward from the Wasatch Plateau toward the San Pitch River.

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2.1.1 MAR Evaporation Comparison

The construction of a MAR project would substantially reduce the amount of evaporation losses that will occur when compared to construction of the proposed Narrows Reservoir Project. The proposed Narrows Reservoir would have an average surface area of 454 acres during the recreation season according to the SDEIS. This would correspond with the primary evaporation period. An annual evaporation rate of approximately 35 in/yr in the vicinity of the Narrows dam site was estimated using the free water surface evaporation (shallow lake) contour map of the United States (NOAA, 1982). Multiplying this estimated evaporation rate by the average area of the proposed Narrows Reservoir gives an estimated average annual evaporation loss of 1,324 acre-feet.

The diversion and storage of water in Narrows Reservoir would decrease flows to Scofield Reservoir, lowering its average level and surface area. The decreased area would result in decreased evaporation. The amount of this decrease can be estimated using the net project increase in evaporation presented in the SDEIS, 370 acre-feet. If the net loss for the Narrows Project is 370 acre-feet, and the Narrows Reservoir loss is 1,324 acre-feet, the Scofield savings must be 954 acre-feet. It is reasonable to assume that this savings would also result if the MAR project is implemented since most of the saving would result from diversions of upper Gooseberry flows, which would be similar to the Narrows Project.

The MAR project infiltration basins would include free water surfaces in the Sanpete Valley that would contribute to evaporation. The total surface area for the MAR infiltration basins would be 100 acres, but the largest free water surface area exposed to the atmosphere at one time would be 80 acres (see infiltration basin design concept below, section 2.1.2) and this would be limited to two months each year, primarily May and June. The ratio of average monthly evaporation for May and June to the average annual evaporation measured at the climate station in Gunnison, Utah was calculated to be approximately 0.33 (WRCC, 2010). This ratio was applied to the annual evaporation estimated from the NOAA contour maps in the northeastern Sanpete Valley area (40 in/yr), resulting a May-June evaporation depth of approximately 13 inches. Multiplying this estimated evaporation depth by the maximum free water surface area of the infiltration basins gives a total volume of approximately 87 acre-feet lost to evaporation during the recharge period.

The net evaporation volume from the MAR Project when compared to existing conditions would be a savings of 868 acre-feet, which is the 954 acre-feet of Scofield savings less the 87 acre-feet loss from the infiltration ponds.

The difference between a MAR project and the proposed Narrows Project is even more significant. The MAR alternative would reduce evaporation by 868 acre-feet whereas the Narrows Project would increase evaporation by 370 acre-feet, resulting in a difference of 1,238 acre-feet of evaporation loss between the projects. This difference is 24% of the expected 5,136 acre-feet average yield of the proposed Narrows Project.

2.1.2 MAR Infiltration Basin Design Concept

A conservative infiltration rate averaging 2 ft per day, typical for a fine to medium-grained alluvial deposit material with no significant confining units below the recharge area, is estimated based on transmissivity and hydraulic conductivities reported for the northeastern Sanpete Valley (Wilberg and Heilweil, 1995; Robinson, 1971). Ten infiltration basins at 10 acres each, totaling an area of approximately 100 acres would be able infiltrate a peak delivery flow of 100 cfs (200 acre-feet per day), whereas the average flow over 54 days is expected to be only 50 cfs. The additional capacity would accommodate expected variations in the peak flow rate. Under more normal operating conditions, when peak flows are not occurring, water would be supplied to six to eight basins at a time, while two to four basins are rotated out for maintenance. An infiltration basin could be rotated out of service every few days for a drying period and maintenance to ensure optimum infiltration rates and limit algal growth. The use of silt fences and riprap would help reduce the fines content of the recharge water.

The infiltration system would be operated to maximize infiltration rates at each basin. Groundwater levels could also be monitored during the recharge period to evaluate the effects of groundwater mounding (during recharge) or depression (during pumping).

Required maintenance of the infiltration basins would consist of a rotating cycle of scraping/turning of the bottom of the basins when infiltration rates decrease below a specified rate. The control of bird and mosquito population may also be necessary to maintain water quality and reduce the impacts to the environment.

2.1.3 MAR Cost Comparisons

An assessment of operational MAR projects across the southwestern United States is presented here to provide an understanding of the feasibility and common use of this technology to meet water resource management goals in the arid southwest states. A specific example of a project of similar scale to the Narrows MAR is reviewed in detail.

The development and construction costs for seven MAR projects are presented in Table 1 to demonstrate the breadth of existing projects currently operating in similar geographic and climatic conditions. Table 1 presents the development and construction costs reported for six Central Arizona Project (CAP) sites and one Utah recharge project. The costs include the construction, land acquisition, design, permitting, and other miscellaneous administrative and oversight fees (Harbor, pers. comm., 2010). The capital costs range from \$0.6 million to \$16.1 million for capacities ranging from 1,200 to 150,000 acre-feet per year (CAP, 2010; Harrison, pers. comm., 2010; Rasmussen, pers. comm., 2010; Harbor, pers. comm., 2010).

Table 1
Capital Costs and Capacities
Central Arizona Project (CAP) - Recharge Projects

Central Arizona Project (CAP) - Recharge Projects					
Project Name	Capital Cost ¹	Permitted Capacity (acre-feet/yr)	Infiltration Capacity (cfs)	Acreage of Basins (# of basins)	Infiltration Rate (ft/day)
Avra Valley Completed in 1996	\$1,216,600	11,000	12	11 (4)	1-3.5
Pima Mine Road Completed in 1998	\$16,093,000	10,000	14	37 (5)	0.7-5.8
Lower Santa Cruz Completed in 2000	\$5,428,800	50,000	65	30 (3)	7+
Agua Fria Completed in 2001	\$14,332,500	100,000	100	100 (7)	1.21-3.48
Hieroglyphic Mountains Completed in 2002	\$7,111,000	35,000	50	38 (3)	3.1-6.8
Tonopah Desert Completed in 2006	\$15,210,000	150,000	300	207 (19)	4-5
Utah Recharge Project					
Weber River Basin Completed in 2004	\$600,000	1,200	3-8	7 (2)	2-3

¹ Cost estimates updated to 2010 based on the ENR Construction Cost Index.

The Narrows Project includes plans for diversion of up to 5,400 acre-feet per year, which is a relatively small volume of water in comparison with the infiltration capacity of some of the recharge projects listed in the table above. The Agua Fria CAP recharge project is considered to be the most comparable, with a delivery capacity of 100 cfs and infiltration rates ranging from 1.21 to 3.48 ft per day. In the section that follows, we compare the proposed Narrows MAR project with the successful CAP Aqua Fria Recharge Project.

2.1.4 Project Comparison

The Agua Fria Recharge Project (AFRP) was selected for comparison because it is the most similar to the conceptual alternative Narrows Project MAR site. The similar features include the infiltration capacity of 100 cfs and the average infiltration rate. The two projects differ in that the hydrogeologic setting of the AFRP is a river channel, whereas the Narrows MAR Project uses an alluvial fan. The AFRP characteristics are summarized below for use in estimating the cost for operation and maintenance of the recharge facilities:

Agua Fria Recharge Project Components

- 100 acres of settling basins
- Permitted recharge capacity of 100,000 acre-feet per year
- 7 infiltration basins divided by cobble-sized riprap
- 1 basin is 14 feet deep while the remaining are 9 feet deep
- Maximum infiltration capacity of 100 cfs
- Wet/dry cycles range from 2 to 4 weeks
- Infiltration rates for basins range from 1.21 ft/day to 3.48 ft/day

Because the comparable Agua Fria Recharge Project has been successfully implemented for nine years, the feasibility of an alternative MAR option for the Narrows Project is further supported.

2.2 MAR Alternative Cost

Golder developed a planning level cost estimate for a MAR infiltration and recovery system using several sources of information. The cost estimate presented in Table 2 includes new estimates for infiltration facilities, which were developed using the RSMeans® Costworks™ Valuator program (2010 update) (R.S. Means Company, Inc., 2010), and incorporating a cost for installing supplementary recovery wells systems in addition to other costs for project elements that were collected from the SDEIS and the Sanpete Update.

This cost estimate is based on MAR infiltration basin design concept, the geologic and hydrogeologic review of the proposed areas for construction of infiltration basins, and an assumption that existing wells could be used for recovery of 50 percent of the water, and new wells would be constructed for recovery of the remaining 50 percent. The costs for the new wells was assumed to be the same as one half of the wells required for New Ground Water Development, as described in Section 2.3.8.

The MAR project cost is composed of the following major components as published in the SDEIS, with the exception of the Diversion and Conveyance costs as noted:

- Construction of ten Infiltration basins in Sanpete County - \$11,872,005
- Diversion of Upper Gooseberry Creek and conveyance to areas of use (Section 2.3.1) - \$12,100,000 (a corrected estimate of \$15.4 million was used, see below)
- One-half the Groundwater Well Development (Section 2.3.8) for recovery of infiltrated water - \$3,250,000

These costs estimates were then reviewed and normalized to 2010 dollars.

Sections 2.3.1 and 2.3.2 of the SDEIS provide a basis for estimating the cost of the Upper Gooseberry diversion and Sanpete conveyance facilities needed for a MAR alternative. However, use of the SDEIS costs estimates requires correction of an error in the SDEIS cost for the Direct Diversion Alternative (Section 2.3.1). The cost quoted for all the features included in the Direct Diversion from Gooseberry Creek Alternative (\$12.1M) does not appear to include the cost of the Gooseberry Creek diversion &

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pumping plant, an electrical transmission line, a 1000 foot long discharge pipeline, and a 0.8 mi long open canal. This became apparent when reviewing Table 2-5 which lists the four other infrastructure components (the Narrows Tunnel rehabilitation, Upper Cottonwood Creek Pipeline, Oak Creek Pipeline, and East Bench Pipeline) that are part of the alternative but total approximately \$13.6 million alone. Other errors may exist but are difficult to assess without access to the complete cost analysis. For the MAR alternative cost estimate we used the costs from Table 2-5 and estimated an additional \$1.75 million, based on our experience with similar construction in similar environments, to cover the cost of the diversion, pump station, transmission line, and canal that were not considered in Section 2.3.1.

A cost estimate for the MAR alternative facilities is presented in Table 2 along with a comparison to the proposed Narrows project. The estimated total cost for the MAR alternative of approximately \$36.7 million is a planning level estimate for the project, and is comparable in term of accuracy to the costs developed for the proposed Narrows Project.

Table 2
Comparison of Total Project Costs
Proposed Narrows Dam and Reservoir versus a Narrow Project using MAR

Project Element	Proposed Action; Dam and Reservoir SDEIS 2010 Cost	Proposed Action; Dam and Reservoir CH2M Hill 2010 Cost	Alternative Action MAR Project Cost 2010
Narrows Dam and Reservoir	\$12,833,157	\$57,800,000 ¹	
Infiltration Basins and appurtenances			\$11,872,005
Recovery Wells			\$3,393,000
Gooseberry Creek Diversion & Pumping Plant			\$1,000,000
Electrical Transmission Line			\$250,000
1000 ft long discharge pipeline			\$250,000
Open canal 0.8 mi long			\$250,000
Narrows Tunnel Rehab	\$4,198,025	\$1,555,200 ²	\$4,198,025
Upper Cottonwood Creek Pipeline	\$706,805		\$706,805
Oak Creek Pipeline	\$356,013		\$356,013
East Bench Pipeline	\$8,349,069		\$8,349,069
Recreation Area	\$1,111,887		
Highway SR-264 Relocation	\$3,436,931		
Wetlands, wildlife and fishery mitigation	\$4,462,164	\$4,462,164	
Reclamation participation (EIS & planning)	\$991,824	\$991,824	\$991,824
SWCD's costs to date	\$2,818,000	\$2,818,000	\$2,818,000
Total Construction Cost	\$39,263,874	\$67, 600,000	\$34,434,823
Estimated interest during construction	\$2,639,296	\$2,800,000	\$2,307,133
Total Project Capital Costs	\$41,900,000	\$70,400,000	\$36,700,000

¹ From the Sanpete Update, pgs 23 and 24. These costs are adjusted to 2010, but they do not include engineering, contract administration, land acquisition, permitting, environmental documentation or mitigation.

² This cost is from the Sanpete Update, pg 25. It is significantly different from the cost listed in the SDEIS, Table 2-5. The reason for the difference is not known.

The estimates for the Narrows project range from approximately \$40 to \$70 million, by the USBR in the SDEIS and CH2M HILL in the Sanpete Update respectively. Neither of these estimates has considered the costs that would likely be necessary to address seismic issues that have been addressed in separate comments from Golder. Because the seismic design criteria used was inadequate, costs are likely to be considerably higher than those shown. As is apparent from Table 2, the estimated costs for the MAR alternative are significantly less than those of the Narrows Dam alternative, even before increases to address seismic issues.

3.0 REBUTTAL

A rebuttal to the elimination of the Carbon County proposed recharge alternative (as presented in the SDEIS in Section 2.3.13.1) is presented here with the reported reason for elimination in *italics* and the rebuttal following:

- *It is unlikely that an aquifer with a capacity to hold over 4,000 acre-feet of water could be found in northern Sanpete County.*
 - There is no areal or volumetric data presented to support the assertion that 4,000 acre-feet of storage is not available. Golder's review of the published documentation, geologic and hydrogeologic reports and water levels in area water wells indicates that there is approximately 6,249 acre-feet of storage available if the water table rises only one foot over the delineated aquifer system.

- The area of the alluvial aquifer in the northeastern Sanpete Valley was delineated to estimate the storage volume available for recharge. The aquifer delineation was derived based on the groundwater flow directions presented by Lowe and others (2002), and the SDEIS figures showing "Lands to Receive Project Water". The delineated aquifer system of the northeastern Sanpete Valley is bounded to the south by a groundwater flow divide south of Spring City, where an east to west line divides groundwater moving to the north from groundwater moving to the south. The eastern extent of the delineation is demarked by the change from valley fill to bedrock, where the valley fill laps up along the bedrock highlands. This is also the basis for the northern delineation. The western extent of the delineation was selected as the San Pitch River and the bedrock outcrops in the center of the Valley. The acreage of the delineated aquifer was estimated to be approximately 31,243 acres.

Porosity values for unconsolidated material range from 20 percent (%) to 30% (Lowe and others, 2002). As a conservative approach, 20% was used. Therefore, if the water table is raised one foot over the 31,243 acres of aquifer, 6,249 acre-feet of water could be stored and would be available for recharge.

The feasibility of raising the water table by one foot can be examined by reviewing the history of groundwater levels in the Sanpete Valley. Wilberg and Heilweil (1995) originally modeled water levels and calibrated them against water levels in 1970. Lowe and others (2002) present a figure showing water level changes between 1970 and 2000. A substantial area covered by the aquifer delineation has had water level declines from 0 to 7 feet, with some from 7 to 11 feet. Water levels may have declined additionally since 2000, based on the precipitation pattern and increased population growth in Utah. Considering the delineated aquifer could cover a much smaller area than estimated above, the water table could be raised by 10 feet or more in some areas and afford much larger aquifer volumes for storage.

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- *Direct diversion of flows (from Gooseberry Creek) would require extensive construction of diversion dams and canals within the reservoir basin, potentially negating the avoidance of impacts by not building the proposed reservoir.*
 - A majority of the Upper Gooseberry basin, which is the source area for water for the proposed project, is already controlled by Fairview Lakes and the existing system of canals and diversions that convey water to the existing tunnel entrance. The areas not already controlled would require a pump station, a canal, a pipeline and appurtenant facilities. However these facilities would be relatively small and would produce far less impacts than the proposed 604 acre Narrows Reservoir.
- *Water would have to be treated to drinking water standards before injection or alternately a large infiltration pond and settling basin, equivalent to a small reservoir, would be required to hold water diverted during spring runoff.*
 - Neither of these stated reasons for elimination of the proposed recharge alternative are valid or relevant for the proposed MAR infiltration basin system. Water treatment would not be required for a MAR system using infiltration basins; case studies in Utah support this. Additionally, a single large infiltration basin and settling basin would not be required or desirable in the design of an efficient distributed MAR infiltration project. The water quality of the Gooseberry Creek snowmelt waters is very good and better than necessary to feed an aquifer infiltration project in Utah. Existing MAR projects in Utah report no adverse water quality issues associated with recharge operations (Heilweil and others, 2009; Rasmussen, pers. comm., 2010). Several existing recharge facilities in the western U.S. have operated successfully without settling basins. For the proposed MAR alternative using infiltration basins, suspended fine particles could be captured or settled out of the melt waters with the use of silt fences and riprap. In addition, the basic operation and maintenance procedures for the infiltration basins would help manage the accumulation and removal of fines from any infiltrated, and later, recovered groundwater.
- *The nature and location of the available aquifers and apparent separation of bedrock and shallow aquifers poses technical problems due to the requirement to inject and remove water from the same aquifer.*
 - These identified *technical problems* are based on two flawed concepts 1) that injection of water via wells is required for a successful project, and 2) that the bedrock and shallow aquifers are hydraulically separate from one another. First, the proposed MAR aquifer recharge project would not require injection wells, but instead would infiltrate the water. Second, based on published geologic and hydrogeologic reports there is no apparent separation of bedrock and shallow aquifers in the area proposed for the construction and operation of MAR infiltration basins. The northeastern Sanpete Valley has been characterized as an unconfined aquifer hydraulically connected to the deep aquifer system (Robinson, 1971). An additional study on the recharge for the Sanpete Valley (Lowe and others, 2002) does not identify or present any confining units in the northeastern portion of the Valley. The published technical data indicate that the proposed MAR facility could successfully recharge directly to the aquifer without significant separation between the shallow and deeper aquifers in this portion of the valley.
- *High drawdown from the proposed high capacity wells could affect adjacent wells and water rights.*
 - This potential problem can be actively managed through thoughtful planning, local hydrogeologic assessment and implementation a master operations plan for the MAR project. Proper assessment and management of the water resource will minimize impacts to existing wells and water rights. Impacts can be mitigated by optimizing

pumping plans, use of selected existing wells for water recovery and by constructing new recovery wells in optimal locations that avoid impacts to other water right holders.

4.0 CONCLUSION

The construction and implementation of a MAR system using infiltration basins appears to meet the purpose and needs of the proposed Narrows Project, is technically feasible and is likely to have a lower net present project cost than the proposed Narrows Project. Golder's review of the geologic and hydrogeologic conditions and a comparison of updated actual construction costs of infiltration facilities in the southwest, indicates that the feasibility of a MAR project in the northeastern part of the Sanpete Valley is well-supported and presents a cost-effective solution for Sanpete County. Other benefits include a significant reduction in the need for mitigation of stream and riparian habitat, enhancing the natural wetland resources in the Sanpete Valley through subsurface recharge, and conserving the stored volume of water by minimizing losses due to evaporation.

A full feasibility study of a MAR project as discussed herein would require field investigations and additional engineering evaluations.

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Section 4

Michael L. Brown
Principal Water Resources Engineer

QUALIFICATIONS

- Demonstrated management abilities and leadership skills
- More than 35 years experience in water resources engineering for a variety of end users
- Experience dealing with multiple stakeholders during project planning and design

39 YEARS OF EXPERIENCE

EDUCATION

BS, Civil Engineering, Cornell University, Ithaca, New York, 1969

ME, Civil Engineering, Cornell University, Ithaca, New York, 1970

MBA, University of Washington, Seattle, Washington, 2000

REGISTRATIONS

Registered Professional Engineer in: Colorado, Washington, Oregon, Idaho and Nevada.

AFFILIATIONS

American Society of Civil Engineers

United States Society on Dams (USSD)

Dam Decommissioning Committee, USSD

PRESENTATIONS AND PAPERS

Design of the tailings disposal facilities for Battle Mountain Gold Company's Crown Jewel Mine near Oroville, Washington. Shuri, F.S., Brown, M.L., and Schumacher, P.M., Tailings and Mine Waste '98, A. A. Balkema/Rotterdam/Brookfield, 1998.

Water Balance Evaluations, Chapter 8.8 of the Mining Environmental Handbook, Effects of Mining on the Environment and American Environmental Controls on Mining. Ed. Jerrold J. Marcus, Imperial College Press, London, 1997.

Progress of early action activities at the Blackbird Mine Site, Brown, M.L., and Fleming, A.J., Tailings and Mine Waste '98, A.A. Balkema/Rotterdam/Brookfield, 1996.

Use of Modsim as a Planning Tool for Water Resources Projects; Brown, M.L., Law, J.E., Labadie, J.W.; paper presented at Colorado State University, February 1987.

The Use of a Network Model to Evaluate the Yield of a Proposed Reservoir; Law, J.E., Brown, M.L., paper presented at Colorado State University, July 1988.

Water Balance in the New Regulatory Environment, A Probabilistic Approach to Heap Leach Water Balance; Brown, M.L., Presented at the 96th Annual Northwest Mining Association Convention, Spokane, WA, December 1990.

Mr. Brown is Principal-in-charge of major engineering projects, especially water resources design projects. His areas of technical specialization are surface water hydrology, hydraulics, water treatment and water resources planning and management. He has served as Project manager for projects such as Blackbird and the Lincoln Fields Residential Area Water Treatment Plant Design. Mr. Brown is currently serving as the Water Resources Market Sector Leader for Golder's US Company, focused on serving clients who supply water or manage water resources.

PROJECT EXPERIENCE HIGHLIGHTS

Water Resource Engineering, Planning and Management

Colorado-Big Thompson Project, Fort Collins, Colorado

CLIENT: Northern Colorado Water Conservancy District

Project manager for hydrologic network modeling of the Upper Colorado River Basin together with the Cache La Poudre River Basin and the existing Colorado-Big Thompson project, in order to estimate the yield which would result from construction of a major dam on the Cache La Poudre River. The Cache La Poudre project is a proposed major municipal water- and pump-storage development on the east slope of the Rocky Mountains.

West Divide Project, Rifle, Colorado

CLIENT: Colorado Water Conservation Board

Project manager for the reformulation of the West Divide project, a planning study for development of supplemental irrigation water, south of Rifle, Colorado. The work included geologic mapping, pre-feasibility design of dams at 12 different sites, cost estimating, water rights evaluations, operation studies, and public meetings.

Water Resource Science

Kettle River Hydrologic Analysis, Republic, Washington

CLIENT: Echo Bay

Hydrology and hydraulic evaluation of Echo Bay's Kettle River tailings facilities. Initial work on Phase I of the project has been followed by an evaluation of Phase II of the project. A central issue of the Phase II work was the evaluation of the magnitude of the 500-year and 100,000-year 24-hour precipitation depths using the State of Washington's new (~1993) guidelines.

Monarch-Greenback, Expert Testimony, Atlanta, Idaho

CLIENT: Hawley Troxell Ennis & Hawley

Served as expert witness in a dispute involving failure of a tailings facility near Atlanta, Idaho, that occurred during the spring of 1997. His testimony addressed hydrologic conditions surrounding the snowmelt runoff that occurred in 1997, specifically whether or not the flood event was extreme, or one that could reasonable have been foreseen. The technical work involved detailed review and analysis of flood flows, snow-course data and other hydrologic parameters.

Water Resource Law and Permitting

Crown Jewel Mine Water Supply System Design, Chesaw, WA

CLIENT: Battle Mountain Gold Company

Project Manager for the Crown Jewel Mine Water Supply System Design and Tailings Disposal Facility (TDF) Design. The water supply work began with basic hydrologic data collection, leading to alternatives assessment regarding potential water supply schemes involving surface water, groundwater and various water rights transfers. The project was complicated by international issues because of proximity to the Canadian border. Ultimately the project facilities included a 600 AF reservoir lined with HDPE for control of leakage. The 70-ft high dam provides off-stream storage for snowmelt runoff which can be used by pumping to the mill, located 4½ miles and 2,500 vertical-feet away on Buckhorn Mountain. The water supply system also included design of the pump station and pipeline for delivery of the water.



Section 5

Robert E. Long Jr., R.G.
Senior Hydrogeologist

QUALIFICATIONS

- Water Resources Management
- Water Rights Planning
- Demand Forecasting
- Reservoir Water Rights
- Water Supply Development
- Wastewater Reuse
- Groundwater-Surface Water Interaction and Analysis

YEARS OF EXPERIENCE: 26

EDUCATION

B.A., Geology, State University of New York at Buffalo, 1986

Post Graduate Studies:

SUNY Environmental School of Forestry - Forestry

Syracuse University – Engineering, Hydrogeology, Aquatic Chemistry

REGISTRATIONS

Registered Professional Geologist, OR

Registered Professional Geologist And Hydrogeologist, WA

Certified Water Rights Examiner, OR

Mr. Long consults on multi-disciplinary water resource planning projects that include groundwater and surface water sources. Mr. Long has municipal expertise in water rights consulting, transfer and acquisition of new water rights, and long-term planning of surface water, stored water, and groundwater supply. He is a hydrogeologist and project manager with 26-years of professional experience and research in hydrogeologic assessment of water supply, Aquifer Storage and Recovery, and water reuse of municipal and industrial wastewater. His has also consulted on water supply and water resources management issues for industrial, irrigation, and drinking water clients throughout Washington, Oregon and Nevada.

SELECTED PROJECT EXPERIENCE

Water for Irrigation, Streams, and Economy (WISE) Rogue River Basin, OR
Delivered a basin wide (300 Sq. Mile) GIS evaluation and report of water loss from irrigation canals to the geologic terrain using available GIS data and mapping. The estimate quantified the loss from canals and the potential benefit that this recharge makes to basin-wide groundwater users and natural ecosystems. The Water for Irrigation, Streams, and Economy (WISE) project is a study aimed at improving water management in the Rogue River Basin.

Columbia Basin Conservation Inventory and Demand Forecast

Provided strategy and senior review for a Columbia Basin water rights analysis. The project collected geographic and quantitative water rights data on the Columbia River in Washington and Oregon. Both groundwater and surface water diversions were assessed. This study included a comprehensive inventory and review of potential water conservation and storage opportunities, water rights, water use, and long-term water supply and demand for water from the Columbia River.

ASR Feasibility and Implementation City of Portland, Oregon

Managed the pilot testing program and groundwater monitoring database, participated in the water quality evaluation, and reviewed construction of eight production wells for use as ASR wells. Consulted with City staff to fully develop ASR opportunities and support well field expansion options.

Water Rights Master Plan, Clackamas River Water Providers, Oregon

Evaluated all municipal water rights that divert water from the Clackamas River. The resulting Water Rights Master Plan presented each municipality with a strategy for strengthening water use claims on the river. The plan recommended cooperative actions that the water providers could take to maximize certification of permits.

Water Management and Conservation Plan City of Banks, Oregon

Project manager for the City's Water Management and Conservation Plan. This small city relies on groundwater wells and headland springs for water supply. The WMCP evaluates the supply and demand and available water rights to develop a strategy for managing these sources and improving conservation of water.

Water Rights Master Plan City of Dallas, Oregon

Provided expert assistance in developing a strategy to retain existing water right permits and to certify the use of surface water and dam reservoir permits held by the City. This project included water right master planning for reservoir rights in the Oregon Coast Range.

Water Right Master Plan, Monrovia Nursery Dayton, Oregon

Provided an expert evaluation of water rights held by this 1500-acre container nursery. The water right evaluation included review of groundwater and surface water permits and certificates, source development, and groundwater quality assessment.

Personnel

Section 6

MEMORANDUM

Date June 18, 2008

To: Central Utah Water Conservancy District.
Attention: Heath Clark, P. E., Project Manager.

From Carl H. Carpenter, P. E., Retired Consultant.

Subject: Review comments on the Draft Sanpete County Water Resources Master Plan Update, dated June 2008.

Thank you for the opportunity to review the Draft Sanpete County Water Resources Master Plan Update, dated June 2008. Following are some suggested corrections and additions to the report.

1. Page 18, 4th line from the top of the page. The statement should say, Carbon "and Emery Counties."
2. Page 19, 5th paragraph. The majority of large-diameter, deep, water wells in Sanpete Valley are completed in the valley fill aquifer. There are only a few completed in bedrock.
3. Page 19, 6th paragraph. This statement is not accurate. Heavy pumping has occurred in Sanpete Valley since the late 1940's with wide- spread draw downs in water levels and mutual well interference. In fact, there has been unplanned conjunctive use going on for many years throughout the valley, with surface-water supplies being supplemented with ground water pumped from alluvial fan aquifers at Manti Creek, Willow Creek, Ephraim Cottonwood Creek, Twin Creek, Cedar Creek, Oak and Canal Creeks (near Spring City), Pleasant Creek, Excell Canyon, and in the Fountain Green area. These alluvial fans are very suitable for aquifer storage and recovery operation. Indeed, they have been functioning in an unplanned and natural manner for many years.
4. Most large-diameter wells in Sanpete Valley have been in service for more than 50 years, and a program of well rehabilitation and/ or replacement should be implemented to restore the original specific capacity of these wells.
5. Page 17, Table 3-Transmountain Water Diversion Ditches. The following corrections and additions are suggested for this table.
Black Canyon Ditch, location: Sections 10 & 14, T. 16 S., R. 5 E.
Bob Wright Ditch, location: R. 7 E. should be changed to R. 6 E.
Canal Canyon Ditch is the same as "Beck's" Ditch, and the location should be in Sec. 32, T. 16 S., R. 5 E.
Cedar Creek Tunnel Ditch is the same as "Mountain Tunnel Ditch," and the location is in Sections 11, 1 & 2, T. 16 S. R. 5 E. It is 1.5 miles long.
Coal Fork Ditch is the same as "Potter's Canyon Ditch", the location is Sec. 24, T. 15 S., R. 5 E., and is ½ mile in length.
Ephraim Tunnel and "North Ephraim Ditch" are one and the same.

Fairview Tunnel should be labeled “Fairview Lakes Tunnel and Ditch”, and is 2 miles long.

Horseshoe Tunnel “and Ditch”, location of ditch: Sections 1 & 2, T. 17 S., R. 4 E., length is 3 miles.

John August Ditch, location: Sec. 35, T. 17 S., R. 4 E., length is 1 mile.

Larson Tunnel “and Ditch”, location: Sections 10, 11, & 12, T. 17 S., R. 4 E., length is 5 miles.

Low Pass Ditch and “South Ephraim Ditch”, length is 7 miles.

Lucy Fork Ditch diverts water to Thistle Creek in the Spanish Fork River drainage.

Madsen Ditch is 2 miles long.

McEwan Flat Ditch conveys water to the Ferron Creek system and is about 5 Miles long. This is not a transmountain diversion to the Sanpete Valley.

Reeder Ditch is the same as “Beck’s Ditch” or also known as “Canal Canyon Ditch,” and is at the same location at Sec. 32, T. 16 S., R. 5 E. This location is incorrectly located in the same box as “Rufus B. Willberg Ditch.”

Seeley-Proctor Ditch is the same as “Potter’s Canyon Ditch,” and is ½ mile long.

Smiths Reservoir Canal diverts water from the Thistle Creek drainage to the Lake Fork drainage, a tributary to Soldier Creek in the Spanish Fork River system.

Twin Creek Tunnel, location: Sec. 1, T. 16 S., R. 5 E.

Wasatch Ditch diverts water to the Larson Tunnel.

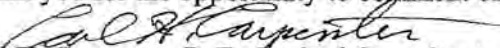
6. A subsurface transmountain diversion occurs in Section 15, T. 18 S. R. 4 E. Water is collected in a 2-1/2 mile long ditch and conveyed to Jet Fox Reservoir, and it then seeps through fractures, joints, and solution channels in the Flagstaff limestone formation, which forms the top of the Wasatch Plateau in this area. This ground water is then collected in several collection boxes on the west side of the plateau in Sections 18 and 19, T. 18 S., R. 4 E., and transmitted in pipelines to Manti for the Manti City drinking water supply. This water supply system has been in operation for about 80 years. As this water flows to Manti it passes through a hydroelectric generating station, which supplies power to Manti City.
7. Table 2: Proposed Conservation Projects in Sanpete County. Item 21, Rehab Conrad Reservoir. This reservoir is also known as “Patton Reservoir” and is located in Sec. 22, T. 18 S., R. 3 E.
7. The author has not had the opportunity to read previous reports prepared in 2000 And 2003 by the Central Utah Water Conservancy District, and wonders if consideration was given to the enlargement of the existing reservoirs and dams at Fairview Lakes, Beaver Dam Reservoir, and Lower Gooseberry Reservoir. This could be either individually or in various combinations to provide the required storage.

Concluding comment about hydrology.

Since the conversion of many irrigation systems from flood and furrow irrigation to sprinkler systems in the past 40 years in Sanpete County, there has been a gradual adjustment in the hydrologic budget and the environment in the impacted

areas. Many wetlands, marsh, and spring areas have dried up and ditch bank vegetation has died. The hydrologic budget must always be in balance, and changing one or more components must be balanced by a corresponding adjustment in the other components. This principle must always be considered in water resource development.

Thank you for the opportunity to comment on this draft.


Carl H. Carpenter, P. E., Retired Consultant.

June 18, 2008



Section 7

TECHNICAL MEMORANDUM

Date: May 26, 2010

Project No.: 093-93384.300

To: Richard Lee

Company: Carbon Water Conservancy District

From: Don West

cc: Mike Brown

**RE: REVIEW AND COMMENT ON THE SEISMIC HAZARD ASPECTS OF THE NARROWS DAM PROJECT
SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT**

The following summary of observations and conclusions regarding the seismic hazards evaluations and proposed seismic design of the Narrows Dam(s) (i.e., proposed, mid-sized and small alternatives) is based on a review of the 2010 Supplemental Draft Environmental Impact Statement (SDEIS) for the Narrows Project, the 1998 Draft Environmental Impact Statement (DEIS) for the Narrows Project, as well as reports, maps and data available from the U.S. Geological Survey and the Utah Geological Survey regarding seismic hazards in Utah. In addition, guidelines from the Federal Emergency Management Agency (FEMA 2005), and the State of Utah (UAC 2010) regarding appropriate earthquake analyses for, and seismic design of dams were reviewed. The primary results, comments and conclusions of the review are listed below.

- There is no apparent updating of the information concerning seismic hazards and seismic design of the dam site from the 1998 DEIS to the 2010 SDEIS. The 2010 SDEIS appears to be verbatim from the 1998 DEIS. Much more technical information regarding the tectonics and seismic hazards of the Wasatch Plateau has become available since 1998 (e.g., U.S. Geological Survey 2006, Quaternary Fault and Fold Database for the United States), and such information and data have not been incorporated into the 2010 SDEIS. A dam is a critical structure and its seismic design, and seismic hazard evaluation, should be based on current, and the most up-to-date information on the active tectonics, potential seismogenic sources and seismic hazards in its region.
- The discussions of seismic hazards and seismic design in the 1998 DEIS and the 2010 SDEIS do not address or incorporate the seismic design requirements outlined in the State of Utah Administrative Code Rule R655-11, Requirements for the Design, Construction and Abandonment of Dams (UAC 2010) in Utah. The requirements of UAC (2010) outline the processes of seismic design and evaluation for dams, and list the types of investigations and analyses that should be completed in order to develop deterministic seismic design parameters.
- The discussions in the 1998 DEIS and the 2010 SDEIS of seismic hazards and seismic design also do not address or incorporate the seismic design requirements outlined in the Federal Guidelines for Dam Safety, Earthquake Analyses and Design of Dams, which

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was developed by FEMA (2005) and which was technically supported by other Federal agencies including the U.S. Bureau of Reclamation. FEMA (2005) outlines the processes of seismic design and evaluation for dams, and lists the types of investigations and analyses that should be completed in order to develop seismic design parameters. Based on the descriptions of seismic hazards in the 2010 SDEIS, the guidelines of FEMA (2005) were not followed.

- There are no stated criteria in either the 2010 SDEIS or the 1998 DEIS regarding what constitutes an active fault that must be considered in seismic design. FEMA (2005) and UAC (2010) in their guidelines for dam seismic design indicate that an active or capable fault is one that demonstrates "movement at or near the ground surface at least once within the past 35,000 years." FEMA (2005) further notes that "for high-hazard potential dams, movement of faults within the range of 35,000 to 100,000 years BP [before present] is considered recent enough to warrant 'active' or 'capable' classification." In addition, dePolo and Slemmons (1998) recommend that for faults in the extensional Basin and Range Province, a latest Pleistocene, 130,000-year activity criterion be used because of the long recurrence intervals of these faults. The Narrows Dam project, although in the Wasatch Plateau sub-province of the Colorado Plateau province, is within the extensional tectonic transition zone between the Basin and Range on the west and the Colorado Plateau on the east. Thus, if a 30,000-, 100,000-, or 130,000-year activity criterion is invoked for the Narrows Dam project, it implies that the Gooseberry Graben faults, which are late Quaternary (U.S. Geological Survey 2006; Black and Hecker 1999a) and within 1 km (0.6 mi) of the dam, may be potential seismogenic sources that should be studied, evaluated and considered in site seismic design. Doing so would result in the use of high design ground motions, and would also introduce the potential for surface fault rupture at the dam. Currently, neither the fault, nor the potential for surface rupture is considered in site seismic design as described in the 1998 DEIS and the 2010 SDEIS. Additionally, there do not appear to have been any fault-specific paleoseismic studies done on the Gooseberry Graben faults, or other nearby active and potentially active faults in order to dismiss them as potential seismogenic sources.
- Based on the 2010 SDEIS and the 1998 DEIS, detailed or comprehensive site-specific seismic hazard assessments and evaluations (as required by FEMA 2005 and UAC 2010) do not appear to have been carried out for the dam site. There is no clear description of what type of assessment (e.g., deterministic or probabilistic) is being used to develop the seismic design parameters, nor is there a description of what the regulatory requirements are for seismic design.
- The 2010 SDEIS and 1998 DEIS imply that there are no active faults near the site that could influence seismic hazards and thus seismic design, and they conclude that the "random" earthquake (a magnitude 5.5) controls the earthquake ground motions at the site. However, the U.S. Geological Survey (2006), in their Quaternary Fault and Fold Database of the United States indicates, for example, that there six (6) active and potentially active faults (i.e., ones that may have had at least one movement event in the past 35,000 years) within about 46 km (28 mi) of the dam site. Three of these faults are within 12 km (7 mi) of the dam site, and one is as close as about 1 km (0.6 mi) from the dam site. The 6 active and potentially active faults within 46 km (28 mi) include, from farthest to closest:
 - Wasatch fault zone, Nephi section (46 km [28 mi] away)
 - Wasatch fault zone, Levan section (45 km [28 mi] away)
 - Gunnison fault (32 km [20 mi] away)

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- Joes Valley fault zone (12 km [7 mi] away)
 - Pleasant Valley fault zone (12 km [7 mi] away)
 - Gooseberry graben faults (< 1 km [< ½ mi] away)
- The seismic design by the Bureau of Reclamation for the nearby (~19 km [12 mi] away from the Narrows Dam site) Scofield Dam (U.S. Bureau of Reclamation 1995) considered the Pleasant Valley and Joes Valley fault zones as active faults capable of generating maximum credible earthquakes (MCE) of surface wave magnitude (M_s) 7.0 and 7.5 respectively. Neither of these earthquake sources is addressed in the 1998 DEIS or the 2010 SDEIS. The seismic design of the Scofield Dam (U.S. Bureau of Reclamation 1995) also considered the random or background earthquake to be a local magnitude (M_L) 6.5, while the 1998 DEIS and the 2010 SDEIS state that the random earthquake is magnitude 5.5. Because the site of the proposed Narrows Project is closer to the Joes Valley fault zone than the Scofield Dam, there is no apparent justification for a design MCE for the Narrows Project smaller than 7.5.
- Based on fault geologic and geometric characteristics taken from Black et al (2001a, 2001b, 2001c), Black et al (1999), and Black and Hecker (1999a, 1999b), the fault rupture-earthquake magnitude relationships of Wells and Coppersmith (1994), Anderson et al (1996), Hanks and Bakun (2002), and the seismic hazard and design studies for the Scofield Dam project (Carbon Water Committee 1998; U.S. Bureau of Reclamation, 1984, 1995; Skipper 1988), the 6 potential seismogenic sources within 46 km (28 mi) of the dam site (listed above) could produce large potential design earthquakes (e.g., magnitudes of 6.8 to 7.5). Using these earthquake magnitudes and the current New Generation Attenuation (NGA) earthquake attenuation relationships of Abrahamson and Silva (2008), Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008), and Idriss (2008), results in potentially high earthquake ground motions (e.g., mean PGA > 0.45 g) at the Narrows Dam site. The presence of a potentially active fault at the dam site (the Gooseberry graben faults), also indicates that there is a potential for surface fault rupture through the dam and facility foundations.
- The seismic design requirements of UAC (2010) state that the random or background earthquake to be considered should have a minimum magnitude of 6.5, and that the PGA developed for the background earthquake be taken from the U.S. Geological Survey seismic hazard mapping for Utah titled "Peak Accelerations (%g) with 5,000 Year Return Time, no fault-specific sources" (State of Utah 2010). This seismic hazard mapping indicates that the PGA from just a random or background earthquake could range from 0.30 to 0.40 g.
- Although the 2010 SDEIS and the 1998 DEIS state that the largest historical earthquake recorded in the Wasatch Plateau was magnitude 4.9, a search of the U.S. Geological Survey's earthquake database (U.S. Geological Survey 2010) reveals that the largest event in the Wasatch Plateau was an M_L 5.4 not 4.9. This earthquake occurred on January 30, 1989, about 97 km (60 mi) south of the dam site.
- The 1998 DEIS and the 2010 SDEIS do not address or discuss the potential for soil liquefaction induced by earthquake shaking, and they do not address the potential for earthquake-induced landslides to affect the reservoir, or other facilities of the proposed alternatives.
- Although the potential for reservoir-triggered seismicity (RTS) may be low, neither the 1998 DEIS nor the 2010 SDEIS address or discuss this potential seismic hazard in order to dismiss it.

- In Section 2 of the 2010 SDEIS, it is stated that the dam will be "designed to withstand effects induced by seismicity associated with mining of coal reserves east of the East Gooseberry Fault (approximately 1 mile away)." This appears to be in conflict with descriptions in Section 3 where the "random" earthquake is stated to be the controlling source for seismic design.
- Overall, the treatment of seismic hazards and seismic design appears to be inadequate given the critical nature of the structure/facility being proposed. The tectonic setting is not well described, appropriate identification, characterization and evaluation of significant potential seismogenic sources at the site (e.g., the Gooseberry graben faults) and in the vicinity of the site (e.g., Pleasant Valley, Joes Valley, Gunnison and Wasatch faults) is lacking, the identification and description of potential earthquake hazards is incomplete (e.g., the potential for liquefaction, surface fault rupture and earthquake-induced landslides into the reservoir are not addressed), and the development of the seismic design parameters is cursory, conflicting and inadequate resulting in a seismic design that is less than it should be. Even though the 1998 DEIS and 2010 SDEIS are environmental documents, that is, not design documents, they should nevertheless provide an adequate and complete treatment of seismic hazards and the proposed seismic design that assures that the EIS cost estimates are accurate, and that provides sufficient information to agency decision makers and the public to assure that they understand the seismic setting, potential hazards and risks, and the potential for related environmental impacts. Such information is lacking in these documents.
- If the seismic hazard assessment and seismic design were performed in accordance with current standard of professional practice, it is likely that the costs for alternatives involving dams at the Narrows site would increase significantly because of increased cost of site-specific hazard identification, characterization, evaluation and design, and the additional cost of permitting, and construction to accommodate a higher PGA, and required provisions to investigate for, and protect against surface fault rupture. Alternatives discarded in Section 2 of the 2010 SDEIS because of costs, or other declared difficulties, would thus become far more attractive.

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Resumé

Section 8

DONALD O. WEST

Education

*M.S.-Level Graduate
Studies, Geological
Sciences, California State
University, Hayward,
California, 1976-1981*

*B.S. Geological Sciences,
University of Washington,
Seattle, Washington, 1972*

Certifications

*Licensed Geologist:
California (1978), Oregon
(1978), Washington (2002)*

*Licensed Engineering
Geologist: California
(1985), Oregon (1978),
Washington (2002)*

Golder Associates Inc. – Redmond

Professional Summary

Mr. West is a Senior Consultant and Engineering Geologist with 38 years of experience in the identification, characterization, and evaluation of geology for soil and rock geotechnical investigations, natural hazard evaluations and critical facility siting. This experience has been focused on dam (hydroelectric, water supply, tailings), transportation (pipelines, highways, transmission lines, tunnels), mining, energy, high-level nuclear waste repository, hazardous waste management, and municipal waste disposal projects in North America, Central America, South America, Africa, the Middle East, Asia, and the Southwest Pacific. His experience has included the planning of field and analytical investigation programs, implementation and management of the programs, and presentation of the results of the investigation programs to clients, and local, state, and federal regulatory agencies. Mr. West's technical specialties include the investigation and evaluation of seismic, volcanic, and slope stability hazards. His experience in seismic hazards evaluations has included regional and site-specific field and analytical paleoseismic studies to identify and characterize potential seismogenic and fault rupture sources, as well as the implementation of deterministic and probabilistic methodologies to develop earthquake strong ground motions for seismic design, seismic stability analyses, and seismic hazard mapping. He has studied volcanic hazards in western North America, South America, Far East Russia, and western Africa to develop hazard mitigation design criteria. Mr. West's experience in geomorphological analysis and geologic site characterization has allowed him to complete numerous regional and site-specific landslide and slope hazards investigations for projects in North America, South America and worldwide.

Employment History

Golder Associates Inc. – Redmond, Washington
Senior Consultant (2002 to Present)

AMEC Earth & Environmental, Inc. – Kirkland, Washington
Associate (2000 to 2002)

Golder Associates Inc. – Redmond, Washington
Associate (1994 to 2000)

Golder Associates Inc. – Alameda, California
Senior Geologist to Associate (1984 to 1994)

Woodward-Clyde Consultants, Inc. – San Francisco, California
Staff Geologist to Senior Project Manager (1973 to 1984)

United States Forest Service – Seattle, Washington
Geologist (1972 to 1973)

52. COTTONWOOD GOOSEBERRY IRRIGATION COMPANY, LYNN ANDERSON, PRESIDENT

Sat 5/29/2010 11:29 AM

May 26, 2010

Mr. Peter Crookston
PRO-774

302 East 1860 South

Provo, UT 84606

Dear Mr. Crookston:

- 52-1 As president of the Cottonwood Gooseberry Irrigation Company (CGIC), it is my pleasure to write this letter in support of the Narrows Dam and Reservoir Project. The CGIC service area is located in and around the city of Fairview. The CGIC currently operates Fairview Lake above the proposed reservoir, the Fairview Tunnel (referred to as the Narrows Tunnel in the SDEIS), and numerous other facilities at the mouth of Fairview Canyon. As described in the SDEIS, CGIC facilities will be impacted by the Narrows Dam and Reservoir Project; and although it will impact CGIC facilities, we are supportive of this project.

The construction of the Narrows Dam and Reservoir, and its associated facilities, will benefit the CGIC shareholders, as well as all of the people of northern Sanpete County. Due to very limited water storage capacity in northern Sanpete County, nearly all cost-effective water conservation measures have been implemented. Despite these extensive efforts, northern Sanpete County does not have adequate late-season water. In many years there is insufficient water in July, August, and September. The Narrows Dam and Reservoir Project will dramatically improve and stabilize the water supply in northern Sanpete County. A more stable water supply will provide a significant economic benefit to the county. It will allow higher value crops to be grown and increase the productivity of existing cultivated lands.

Multiple studies have confirmed that the Narrows Dam and Reservoir Project is the most environmentally feasible and cost effective way for Sanpete County to develop its water rights. The project contains extensive mitigation efforts to compensate for any environmental impacts. The CGIC's Fairview Lake has been identified in the SDEIS as a water source for wetland and fishery mitigation efforts above the proposed Narrows Reservoir. The CGIC is supportive of these mitigation efforts, and is willing to work with the Sanpete Water Conservancy District. However, some compensation for the use of CGIC facilities is expected.

The CGIC owns and operates the Fairview Tunnel. Since its construction in the 1960's, the CGIC has been diverting water from Fairview Lake through the tunnel. As mentioned in the SDEIS, the tunnel has severe stability problems. Failure at the tunnel outlet is already backing water up into the tunnel, which is accelerating the deterioration of the tunnel. Complete failure at the tunnel outlet appears imminent. Complete failure will occur in the near future. Failure of the tunnel would eliminate the ability of the CGIC to deliver water from Fairview Lake to its shareholders. To prevent the loss of the ability to convey water to our shareholders, CGIC is planning to conduct extensive maintenance of the tunnel starting in

the fall of 2010. The purpose of the maintenance will be to maintain the ability of the tunnel to convey water from Fairview Lake to CGIC shareholders. The CGIC will be arranging their own financing of the maintenance effort, and as such will only be doing the work necessary to maintain the ability of the tunnel to convey CGIC water rights. Recent inspections have shown that we cannot take the chance of waiting any longer.

The CGIC strongly supports the construction of the Narrows Dam and Reservoir. The Sanpete water rights have been reduced to obtain the highest priority water right in the Gooseberry Creek Drainage. We believe it is time that the many agreements that have been signed relating to the Sanpete Water Conservancy District's water rights be honored and this project built.

We appreciate the opportunity to comment on the Supplemental Draft EIS.

Sincerely,

Lynn Anderson

President

Cottonwood Gooseberry Irrigation Company

53. GUNNISON IRRIGATION COMPANY, ALLEN DYRENG, PRESIDENT

Bureau of Reclamation
Peter Crookston PRO-774
302 E. 1860 South
Provo Utah 84606

To whom it may concern;

- 53-1 This letter is support of the Narrows Project for Sanpete County from our company.

This project is critical for the water needs of Sanpete County. This water belongs to Sanpete County and has been argued and passed over for the past 75 years, now is the time to make it happen. All of the communities in Sanpete impose water restrictions from about July on each year. Agriculture simply goes without. This water will make a difference as well as recreation.

Sanpete County has been a leader in the State in developing water conservation practices. A news report this week from the Department of Natural Resources stated that by 2050 Utah Reservoirs will have lost 25% of their storage capacities due to silt and sediment. This storage cannot be reclaimed due to excessive costs. We simply need to build more storage reservoirs.

Sanpete County needs and deserves this Project.

Respectfully

Gunnison Irrigation Company
Box 220228
Centerfield, Utah.

 President
 Secretary

PRO OFFICIAL FILE COPY

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RECEIVED

APR 26 '10

COPY

Gunnison Irrigation Company

CENTERFIELD, UTAH 84622

April 22, 2010

Date	Initials	Code
		100
		105
		107
		100
		770
		774cy
Action:		
Classification:		
Project: <u>NARROWS</u>		
Date:		

**54. MAYFIELD IRRIGATION COMPANY, WILLIAM KAY CHRISTIANSEN,
PRESIDENT**

ORIGINAL

Crookston, Peter L

From: Shawn Kay Christiansen [shawnproperties@yahoo.com]
Sent: Thursday, May 27, 2010 2:10 PM
To: PRO NarrowsEIS
Subject: Narrows Project

To whom it may concern,

54-1 The courts have ruled!

Sanpete county has been promised the narrows project since 1943. The water right is Sanpete County's not Carbon County's.

We as a county have been deprived of this asset for far to long.

Make this Right!

William Kay Christiansen
"President" Mayfield Irrigation Company

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JUN 10

6/30/10	120
7/22/10	105
	187
	700
	770
	77404

ENV-600
Narrows
10045861
1122816

**55. NORTH CARBON SALINITY IMPROVEMENT PROJECT, FRANK SACCOMANNO,
PRESIDENT, SPRING GLEN CANAL COMPANY**



TO THE BUREAU OF RECLAMATION CONCERNING THE GOOSEBERRY NARROWS PROJECT

FROM THE NORTH CARBON SALINITY IMPROVEMENT PROJECT

THE NORTH CARBON SALINITY IMPROVEMENT GROUP FORMED BY THREE CANAL COMPANIES

AND ONE DITCH GROUP. THE THREE COMPANIES, THE SPRING GLEN CANAL COMPANY, THE STOWELL CANAL COMPANY, THE BRYNER HANSEN CANAL COMPANY, THE OBERTO DITCH GROUP. THE GROUP SUBMITTED A PROPOSAL TO THE USDI BUREAU OF RECLAMATION A SALINITY PROPOSAL FOR FUNDING TO PIPE THE MAIN LINES AND LATERALS. APPROVAL WAS GRANTED ALONG WITH THE HELP OF THE NRCS FOR ON FARM FUNDING AND DESIGN. THE PROJECT WAS DESIGNED AND BUILT BY HARWARD IRRIGATION COMPANY.

THE GROUPS COMPANIES AND FILINGS WERE COMPLETED PRIOR TO SCOFIELD RESERVOIR BEING BUILT.

THE GROUPS MAJOR WATER SUPPLY IS FROM DIRECT FLOW FILINGS. THE LISTING OF WATER RIGHT NUMBERS AND WATER CFS TOTALS FOLLOW. ALSO SEE ATTACHED LIST.

WATER USER- BRYNER HANSEN CANAL COMPANY. WR#S 91-646 91-1758 91-1759 911760 91-2503 91-2504. TOTAL CFS ALL CLASSES 3.4061

WATER USER-SPRING GLEN CANAL COMPANY. WR#S 91-717 91-753 91-752. TOTAL CFS ALL CLASSES 14.9231

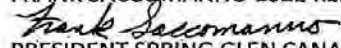
WATER USER-STOWELL CANAL COMPANY. WR#S 91-718 91-759 91-758 91-757 91-756 91-755 91-754. TOTAL CFS ALL CLASSES 6.4158

WATER USER-OBERTO DITCH GROUP. WR#S 91-2151 91-641 91-5168 91-639 91-639 91-359 91-634 91-2408 91-633 91-633 91-636 91-642 91-643 91-644 91-645 92-2118 91-2148 91-2149 91-2152 91-2407. TOTAL CFS ALL CLASSES .9683

55-1 ALL DIRECT FLOW WATER RIGHTS MUST BE SATISFIED BEFORE WATER CAN BE STORED IN A RESERVOIR. DIRECT FLOW RIGHTS MUST PASS THRU A RESERVOIR AND CAN NOT BE STORED.

THE NARROWS PROJECT CANNOT HELP BUT REDUCE THESE DIRECT FLOW FILINGS.

FRANK SACCOMANNO 1522 KENILWORTH RD. SPRING GLEN UTAH 84526


PRESIDENT SPRING GLEN CANAL COMPANY AND CHAIRMAN OF THE NORTH CARBON GROUP

E-MAIL fs@emerytelcom.net

TELEPHONE 435-636-5652



NORTH CARBON GROUP - PRICE RIVER CHANGE APPLICATIONS FILED AND APPROVED USER'S CLASSES/PRIORITIES & FLOW (CFS)											
WATER USER	WR #	MORSE DECREE							KELLER DECREE		Total - CFS
		1st Class 1874	2nd Class 1876	3rd Class 1878	4th Class 1880	5th Class 1882	6th Class 1884	7th Class 1886	K-3 1906 A	K-5 1907 B	
Bryner - Hansen Ditch Company	91-848	1.058									1.058
	91-1758		0.117								0.117
	91-1759				0.117						0.117
	91-1760					0.117					0.117
	91-2503								1.32		1.32
	91-2504									0.6771	0.6771
	Total - cfs	1.058	0.117	0	0.117	0.117	0	0	1.32	0.6771	3.4081
Spring Glen Canal Company	91-717	5.6									5.6
	91-753								4.45		4.45
	91-752									4.8731	4.8731
	Total - cfs	5.6	0	0	0	0	0	0	4.45	4.8731	14.9231
Stowell Mutual Water & Canal Company	91-718	2.133									2.133
	91-759		0.117								0.117
	91-758			0.067							0.067
	91-757						0.1				0.1
	91-756							0.1			0.1
	91-755								2.41		2.41
	91-754									1.4888	1.4888
	Total - cfs	2.133	0.117	0.067	0	0	0.1	0.1	2.41	1.4888	6.4168
Tom Bruno (Gay to No. Carbon Diversion)	91-732	0.17									0.17
	91-1791								0.15		0.15
	91-1792									0.1167	0.1167
	Total - cfs	0.17	0	0	0	0	0	0	0.15	0.1167	0.4367
O'Berto Ditch User's Robert E. & F. Diane Olson William W. & Faye F. Branson Robert A. & Mava F. Farrell Bruce B. & Sherry L. Christensen	91-2151	0.0058									0.0058
	91-641	0.0417									0.0417
	91-5168	0.043									0.043
	91-639	0.0114									0.0114

Water User Agencies
and Organizations

WATER USER	WR #	MORSE DECREE							KELLER DECREE		Total - CFS
		1st Class 1874	2nd Class 1876	3rd Class 1878	4th Class 1880	5th Class 1882	6th Class 1884	7th Class 1886	K-3 1906 A	K-5 1907 B	
Steve Zamantakis	91-639	0.0397									0.0397
John Steve O'Barto	91-359	0.0046									0.0124
John Steve O'Barto	91-634	0.0281									0.0281
John O'Barto	91-2406	0.0407									0.0407
George & Eleanor Zamantakis	91-633*	0.012									0.012
Robert & Mava Farrell	91-636*	0.118									0.118
Joy & Mike Gipson	91-642*	0.0419									0.0419
Randy D. Leader	91-643*	0.0405									0.0405
Ed & Wilma Howa	91-644*	0.1161									0.1161
Larry D. Milano		0.0236									0.0236
Jerry & Geraldine Sherman		0.0238									0.0238
Dorinda Lee & Ann Marie Milano		0.0238									0.0238
Clyde & Julie Ann Zorn		0.0243									0.0243
Robert Sherman, etal		0.0459									0.0459
Joseph N. & Clara B. Lovato		0.0145									0.0145
James Weston Decker, etal		0.0143									0.0143
Ronald T. & Bernadette L. Jones		0.0288									0.0288
William W. Branson, etal	91-645*	0.0423									0.0423
Kathleen M. & Linden W. Laws	91-2118*	0.0267									0.0267
New Life Ministries, Inc.	91-2148*	0.0737									0.0737
McCourt Holdings, LLC	91-2149*	0.0288									0.0288
Deson Properties, Inc		0.0386									0.0386
Robert E. & F. Diane Olson	91-2152*	0.0045									0.0045
McCourt Holdings, LLC	91-2407*	0.0048									0.0045
Deson Properties, Inc		0.0084									0.0084
Total - cfs		0.9683	0	0	0	0	0	0	0	0	0.9683
Cumulative Flow - CFS		9.9293	0.234	0.067	0.117	0.117	0.1	0.1	8.33	7.1557	26.16

*All require a change application and most title work.

5/12/2010

56. PRICE RIVER WATER IMPROVEMENT DISTRICT

FL



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Reply Date:		
Date	Initials	Code
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Action:
Class/Source: ENV-10.00
P: NARROWS
C: 10037466
ID: 1122816

May 24, 2010

Bureau of Reclamation
ATTN: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606-7317

RE: Proposed Gooseberry/Narrows Project, SDEIS Review and Comments

Dear Mr. Crookston,

56-1 Recently, the Price River Water Improvement District, a Utah Special Service District, headquartered in Price, Utah (PRWID), received a copy of the Supplemental Draft Environmental Impact Statement (SDEIS). We have determined that the effect of this project on the health of the citizens that use Scofield Reservoir and its tributaries as their source of drinking water has either been ignored or discounted so as to appear to be inconsequential. We, the Board of Trustees and staff of PRWID, wish to call your attention to what we have determined to be significant hazards to human health.

Scofield Reservoir is the primary source of drinking water to the citizens of Carbon County who live in the Price River Valley. This water supplements ground water sources previously developed by the municipalities of Helper and Price and is the sole source of water for Wellington City and the County in general. As such, any degradation in the quality of water in Scofield Reservoir negatively impacts the homes and businesses that depend on this water.

56-2 Two issues impacting water quality give us great concern, especially in the event of drought or reduction in flow to Scofield Reservoir. They are the levels of phosphorous that naturally occur in Scofield Reservoir and the formation of disinfection by-products in the drinking water distribution system. We believe that both of these conditions will increase if the flow of water entering Scofield Reservoir is diminished.

First, the phosphorous that is present will continue to be released into the reservoir. With lower levels of water, the dilution factor will decrease resulting in higher concentrations of phosphorous. This nutrient enrichment will then promote a significant increase in algal growth resulting in higher concentrations of dissolved organics within the Reservoir. As the life cycle of the algae occurs, greater amounts of algae will die-off, resulting in lowered levels of dissolved



Bureau of Reclamation
ATTN: Peter Crookston, PRO-774
Gooseberry/Narrows SDEIS Comments
May 24, 2010
Page -2-

oxygen within the Reservoir. Lower levels of dissolved oxygen will promote the growth of Blue-Green algae which can directly affect the health of downstream users and will negatively impact the ability of fish to survive in the Reservoir. This will require additional water treatment efforts resulting in higher costs.

- 56-3 Second, the rise in dissolved organics and Total Organic Carbon (TOCs) from additional algal growth will have a direct correlation to the formation of disinfection by-products, i.e. Trihalomethanes (TTHMs), and Haloacetic Acids (HAA5s). PRWID has developed a history of testing for these components in its water treatment and distribution systems and has determined that when water levels are low, especially consistently low, and the temperature of the water increases, the formation of these components increases significantly. The Utah Division of Drinking Water and U.S. Environmental Protection Agency have determined that TTHMs and HAA5s are carcinogenic and must be prevented from forming because of their threat to human health. Additional treatment requirements to remove dissolved organics or TOCs from the raw water, or to remove TTHMs and HAA5s that form in the water distribution system can be cost prohibitive. The best way to prevent the formation of these compounds is to prevent the release of dissolved organics into the raw water supply.

PRWID expects that the proposed Gooseberry/Narrows Dam, if constructed will:

- 56-4 ➤ Negatively affect the quality of the water stored in and released from Scofield Reservoir.
- 56-5 ➤ Negatively affect the fishery coming into, and leaving Scofield Reservoir.
- 56-6 ➤ Negatively affect the ability of PRWID to effectively treat and distribute safe and healthy drinking water to its users.
 - Negatively impact PRWID's ability to meet the drinking water needs of its users during drought cycles.
 - Negatively impact the health of the District's culinary water users.
 - Raise the treatment costs for drinking water to PRWID's users.

For these reasons and in addition to the questionable cost/benefit ratio associated with the proposed project, we directly oppose the proposed construction of the Gooseberry/Narrows Dam.

Thank you for your consideration of our comments.

Bureau of Reclamation
ATTN: Peter Crookston, PRO-774
Gooseberry/Narrows SDEIS Comments
May 24, 2010
Page -3-

Sincerely,



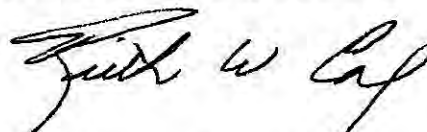
Richard Tatton, Chairman
Trustee - Price City



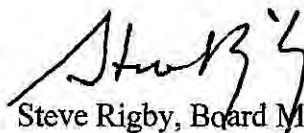
Keith Cox, Vice-Chairman
Trustee - the County-At-Large



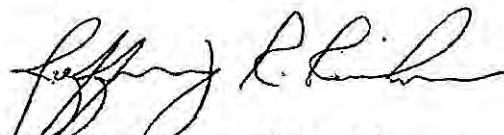
Ben Blackburn, Board Member
Trustee - Wellington City



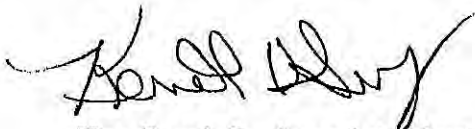
Gary Harwood, Board Member
Trustee - Helper City



Steve Rigby, Board Member
Trustee - the County-At-Large



Jeffrey R. Richens, District Manager
PRWID



Ken Snook Jr., Superintendent
Water Treatment Plant - PRWID

cc: Walt Baker, Director - Utah Division of Water Quality
Ken Bausfield, Director - Utah Division of Drinking Water
Utah Department of Environmental Quality Staff

**57. PRICE RIVER WATER USERS ASSOCIATION, WILLIAM BUTCHER,
PRESIDENT**

TIL

ORIGINAL
Price River Water Users Association
375 South Carbon Ave #A10
Price, UT 84501

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May 31, 2010

Mr. Peter Crookston
PRO-774
Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606-7317
Sent via e-mail: narrowsSDEIS@usbr.gov

Reply Date		
Date	Initials	Code
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	<i>[Signature]</i>	107
	<i>[Signature]</i>	105
	<i>[Signature]</i>	700
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6/23/10	PC	774 cy

Actions:
Classification: **ENV - 6.00**
Project: **NARROWS**
Comments: **10041645**
Date: **1122816**

Dear Mr. Crookston,

I am writing to voice my opposition to the construction of the proposed Gooseberry Reservoir and to comment on the Supplemental Draft Environmental Impact Statement that has been prepared for it.

In addition to serving as president of the Price River Water Users Association, I am also operations manager for William Marsing Livestock, Inc., one of the largest, if not the largest, agricultural water users on the Price River system, and I know exactly how precious water is to this valley. Since the SDEIS was released, I've been doing some research on the proposed project. I've found many things to comment on.

57-1

I have found that the construction of the proposed dam revolves partially around the myth that the Price River system has a surplus of water, and that the Gooseberry Reservoir would only store the water that is spilled on a regular basis from Scofield Reservoir. I can assure you that this is not the case at all. Scofield Reservoir is subject to weather cycles, having a few high years in a row, and then it goes for a number of years where the storage is low, and sometimes not even meeting demand. The records are very clear on this point. I find it very concerning that on page S-10 the SDEIS states that "From 1960 to 2002 the reservoir spilled 17 times. This indicates that, on average, the reservoir historically has spilled about every 2 to 3 years." That statement is a complete misuse of statistical information. The math is technically correct that 42 years divided by 17 spills is a spill every 2 or 3 years, leading the reader to believe that Scofield Reservoir's natural state is full, or nearly always full, but the actual historical data paints a very different picture.

Records indicate that Scofield Reservoir usually spills for a number of years back to back, and then experiences a number of years with no spills. Over the period from 1960 to 2002 the reservoir has experienced 10 years in a row that no spill has occurred. Stating in the SDEIS that *"the reservoir historically has spilled about every 2 to 3 years"* is simply scientific malpractice. The information that the preparers used to arrive at the reservoir spilling 17 times also clearly shows that the reservoir does not spill *"about every 2 to 3 years."* Furthermore, the historical data shows that of the years that the reservoir did not spill, often times the maximum storage reached for the year did not allow for full water delivery. The preparers have ignored some of the historical data to skew the result of their analysis toward a specific viewpoint, one that supports the building of Gooseberry Reservoir. That said, I find it hard to believe any of the scientific information presented in the SDEIS.

- 57-2 Another disturbing fact that I've come across in my research is the fact that Sanpete Water Conservancy District is regularly and flagrantly in violation of the agreements that allow them to operate the transmountain diversion tunnel. The water control structures are in poor repair. The water measurement equipment is placed in the wrong locations. The waterworks that prevent water from flowing through the tunnel during the time when there is no right for the water to flow through it is in disrepair and not functioning. Work has been recently done that allows them to capture water from above the ditch that goes from Fairview Lake to the tunnel entrance that they should be allowing to pass into Gooseberry Creek. I fear that if the Gooseberry Reservoir is constructed, these kinds of violations of water rights will continue. I also fear that their track record of poor maintenance will continue to the detriment of all Carbon County water users.

- 57-3 My research has also shown me that, in the 1984 agreement, Sanpete agreed to a 10,000 acre foot storage limit on the Gooseberry Reservoir. This could only be increased as required if there were minimum streamflows in Gooseberry Creek below the dam. By increasing the capacity of the proposed reservoir to 14,500 acre feet (the maximum allowed in the 1984 agreement), it seems that there should be a demand for 4,500 acre feet to flow down Gooseberry Creek on a yearly basis. There is no plan to release that much water from the proposed reservoir down Gooseberry Creek, and therefore the maximum storage capacity of the reservoir must be lowered to the 10,000 acre foot limit, as required by the 1984 agreement, or the capacity increased above the 10,000 acre foot mark by only the amount of water that would be required to be released down Gooseberry Creek. This amount would only be a few hundred acre feet. The SDEIS needs to be re-written to reflect the legal storage limits.

- 57-4 Another thing that the SDEIS states that is worth mentioning is the fact that the project is touted for its recreational potential. There are several reservoirs in the area, each presenting a multitude of recreational opportunities right now. The construction of the Gooseberry Reservoir will, according to officials from the Price River Water Improvement District, degrade the current quality of Scofield Reservoir, reducing or eliminating the recreational potential offered there. Numerous groups like the Utah Rivers Council oppose the Gooseberry Reservoir because they fear it will destroy a popular trout fishing stream. The small addition of recreational opportunity on the proposed Gooseberry Reservoir to an area already rich with recreational sites will not nearly offset the degradation of recreational opportunities that are now offered by Gooseberry Creek and Scofield Reservoir.
- 57-5 Furthermore, this proposed project is not about developing an unused source of water. This project, if built, would only serve to take water from Carbon County interests - water that has been put to beneficial use, and water that the water users have become accustomed to using.

In closing, I oppose the construction of this project. I thank you for taking the time to consider my comments.

Sincerely



William Butcher
President

58. ROCK DAM IRRIGATION COMPANY, DON HARDY, PRESIDENT

Thu 5/6/2010 7:59 PM

Don Hardy

220 S. 300 E.

Mt. Pleasant, Utah 84647

435-851-3305

dlhardy22@yahoo.com

To Whom this may concern,

58-1 I am a very concerned citizen of Sanpete County, where, I am President of the Rock Dam Irrigation Company. It concerns me to know that Sanpete County has to fight so hard for something that already belongs to us!! It's a shame to know that we may not receive what is rightfully ours! The federal government spends money on issues that seem frivolous when compared to people's need for water to earn a living. Not only am I the President of an Irrigation Company but I am a producer of many livestock, Turkeys, Cattle, and Sheep. I have a big need for this water, along with many other Ranchers/Farmers in the Sanpete County area. Therefore, I recommend that you seriously consider and do what's right for the people of Sanpete County and surrounding areas.

The Narrows will also have a favorable impact on education. New jobs in connection with building the Narrows will bring new income to families. Additional "ripple" economic activity, and particularly the increased ability of farmers to enhance the productivity of their land with the water the Narrows will provide, will likewise create additional income for local families. One of the important ways this will evidence itself will be in more people investing in education. The impact on Sanpete's public schools, Snow College and other educational institutions will be favorable. Sanpete County rightfully owns the water rights involved. The Utah Supreme Court and the US Department of Justice have both acknowledged Sanpete's water rights. So please give what rightfully belongs to Sanpete County...Water!!

Sincerely,

Don Hardy

President of Rock Dam Irrigation Company and Rancher

59. SANPETE WATER CONSERVANCY DISTRICT, DAVID L. PETERSON, MEMBER

AL

ORIGINAL

May 3, 2010

Bureau of Reclamation
Attn: Peter Crookston
PRO-774
302 East 1860 South
Provo, UT 84606

RE: Narrows Project

To Whom It May Concern:

- 59-1** The Narrows Project should have been completed years ago. Sanpete filed on this water and the filing were approved by the State Engineer and upheld by the courts. All the studies were approved showing that Sanpete could go ahead and build the dam and other parts of the project which will store 17000 acre feet of water and deliver all the water (except some prior rights) to Sanpete Water users every year.

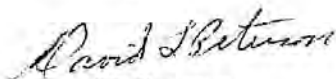
When you add it all up there has been enough water gone east to Carbon County to supply their rights from now on. It would solve a lot of problem to just put in a tight dam and Sanpete could take it all for the next 100 years.

When we signed the 1984 agreement, we acted in good faith and thought things would get better. But, time has proven that Carbon County wants all the water and has no intention of cooperating. They could now prove other wise and support the completion of the project and helping both sides benefit with a completed project. It is time to correct past mistakes and complete this project.

The farming interest will soon be gone and all the water will be needed for homes and communities. All with higher priorities and will consume all the water available.

Please do the right thing. Finish this project as it was intended and previously approved.

Sincerely,



David L. Peterson
Sanpete Water Conservancy District member and former chairman
160 E. 200 N.
Mt. Pleasant, UT 84647
(435) 462-9494

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Classification: ENV-10.00		
Project: Narrows		
Control No: 10232402		
Folder ID: 1122816		

**60. SANPETE WATER CONSERVANCY DISTRICT, EDWIN B. SUNDERLAND,
CHAIRMAN**

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COPY Sanpete Water Conservancy District

Rept. Date

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435/835-5878 fax		174cy

May 28, 2010

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606

Re: Comments on Narrows Dam & Reservoir
Supplemental Draft Environmental Impact Statement

Action: EXH-16.00
Class/Ref: NARROWS
File No: 10037385
Date: 11/2/81

60-1 The purpose of this letter is to comment on the recently-released Supplemental Draft Environmental Impact Statement which addresses the Narrows Dam & Reservoir in Sanpete County.

The Sanpete Water Conservancy District, representing the citizens of Sanpete County, strongly favors the creation of the Narrows Project.

As we have reviewed the recently-published Supplemental Draft, the follow points which encourage construction of the Narrows seem not to have been discussed in the document, or not discussed in sufficient detail. Please give careful consideration to the following:

1. Nowhere does the document address the matter of integrity as it pertains to promises of water storage that have been made to Sanpete County for nearly 80 years. Yes, we understand that an EIS is intended to focus on environmental matters. We believe that integrity falls completely within the broad scope of the word "environment." Environmentalism is advocacy for protecting the natural environment from destruction or pollution. Surely, dishonesty or lack of integrity are destructive, morally polluting forces, wherever they are found. Moral pollution is more reprehensible and more destructive to a society than biologic pollution. The failure to exercise integrity is the antithesis of all that is good and natural. The No-Action Alternative would propagate a huge, negative socio-economic impact to Sanpete County that is not addressed in the SDEIS. As Reclamation considers its Record of Decision, we ask that you give strong consideration to the promises that have been made to Sanpete, including (but not limited to):
 - a. The original promises of the Gooseberry Project (as early as the 1930's) to provide water storage to Sanpete. Promises unkept.
 - b. The promise to Sanpete that water storage would be provided after the enlargement/repair of Scofield in World War II. Promise unfulfilled.

Bureau of Reclamation
May 28, 2010
Page 2

c. Carbon County's promise (Compromise Agreement of 1984) to stop objecting to the Narrows, in exchange for a substantial reduction of water storage and other significant compromises made by Sanpete. Promise broken.

2. The Narrows will provide a very significant economic boost to Sanpete and surrounding counties. This is projected to come in the form of:

a. The creation of 185--241 full-time, meaningful jobs during the estimated 2-year construction phase of the project. These jobs would be filled largely by people from not just Sanpete County, but Carbon and other surrounding counties as well.

b. Another 180 indirect jobs through indirect and induced economic activities.

c. Every \$1 million spent on construction (construction budget is approximately \$34 million) will generate an additional \$825,858 of economic output through indirect and induced activities.

d. After construction, the Narrows will create about \$1 million per year of economic benefit. While this will impact primarily Sanpete County, the benefits will surely ripple outward to surrounding counties. This \$1 million per year is anticipated to continue for 100 years, perhaps longer.

e. The recreational facilities that will be built as part of the Narrows (campgrounds, picnic areas, rest rooms, boat ramp, stocked fishing, etc.) will have a favorable economic impact. As people travel to reach the Narrows recreational facilities, the communities through which they travel will benefit from the kinds of economic activities that travelers typically produce (sale of fuel, restaurant food, groceries, etc.). These will be favorable to the businesses of Sanpete and other communities for decades or generations.

(The economic impacts mentioned in items 2a--2e above are based on estimates from President Obama's Council of Economic Advisors, from the Center for Strategic Economic Research, and from economic/engineering studies done directly in connection with the Narrows Project.)

3. Nowhere does the SDEIS mention that the Narrows will likely have a favorable effect on tax rates in Sanpete County. As additional jobs and increased economic activity are created, a portion of those revenues will naturally flow into tax coffers. That will tend to help hold down future taxes and provide for future needs of Sanpete County.

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4. We believe the Narrows will have very marked, favorable impact on public and higher education in and beyond Sanpete County. This, in turn, will likely have a favorable impact on the environment. As the finances of local families are favorably impacted by the Narrows (as outlined in section 2 above), it is typical and consistent with the cultural habits of families throughout Utah (including Sanpete) to provide more and better education for themselves and their children. As more children and young adults are provided the advantages of greater educational opportunities, it will have an indisputable, favorable impact on our citizens, including a heightened awareness of and respect for environmental issues (a correlation can be drawn that links higher levels of education and income with greater environmental awareness and respect). These kinds of impacts typically ripple through multiple generations to come, in an ascending spiral that gains momentum as it passes from one generation to the next.

5. The SDEIS does not sufficiently emphasize the value of the recreational facilities that will be created as part of the Narrows Project. The fishing, boating, camping, and general outdoors activities that will be made available for residents of Sanpete, Carbon, Millard and other counties will elevate the land in question from an open, rather unremarkable meadow to an attractive lake that makes the land much more engaging and useful to those who value the outdoors. This, we believe, is an improvement to our environment, not a detriment.

6. The above-referenced (item 5) recreational facilities will have another direct, favorable environmental impact. People in Central Utah and beyond will have to drive shorter distances to access the more developed kinds of camping, fishing, etc. facilities that will be offered by the Narrows. Less driving equates to fewer automobile emissions and reduced fuel consumption.

7. The SDEIS mentions water conservation as an important element of Sanpete's future ability to have sufficient water. For many years Sanpete County has aggressively implemented water conservation infrastructure and techniques which have saved an average of 8,000 acre-feet of water per year so far. We will continue to conserve, and anticipate conserving even more water. Utah State University has recognized Sanpete as a leader in water conservation measures. But conservation alone will never--no matter how effectively done--alleviate our inability to capture water that flows past us, particularly in Northern Sanpete County.

8. The SDEIS mentions various wildlife species. Wildlife is important to us; we are outdoors people by nature. But storing water to enable Sanpete residents to farm and have residential water is vitally important.

9. The SDEIS does not mention the fact that the Utah State Legislature agrees that the Narrows should be built. The Utah House of Representatives passed a resolution (H.C.R. 8) in 2008, and the Utah State Senate passed a resolution (S.R. 2) in 2009, both with very wide margins, supporting construction of the Narrows.

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Page 4

10. As recently as April 29, 2010, (in the public comments meeting held in Price), Carbon County and others voiced the following objections to the Narrows. We offer the following answers, and welcome the opportunity to expand our answers as the NEPA process progresses:

- Objection: Building the Narrows will cause a water shortage in Carbon.
Answer: *Carbon's water storage was doubled as part of the overall plan. Sanpete has yet to receive its promised water. It can't be Sanpete's responsibility to give Carbon water we own, or to help Carbon manage its water supply.
*Further, the 5,400 acre-feet of water that will be provided to Sanpete annually (as expressed in the 1984 Compromise Agreement) is based on engineering studies by the State of Utah which determined that 5,400 acre-feet is the amount of water that could be used by Sanpete without creating a negative impact on Carbon.
- Objection: Building the Narrows will have a detrimental effect on Carbon's water quality.
Answer: *Thorough mitigation is planned to avoid negative impacts.
*Water quality issues already exist with Scofield. They are not Sanpete's responsibility to solve.
*Planned mitigation is such that the net impact of the Narrows on Carbon's water quality will be neutral.
*Our water quality mitigation was coordinated with and approved by Utah's Department of Environmental Quality.
- Objection: PacifiCorp continues to express concern that if the Narrows it built, they may run short of water to run their Carbon power plant every three to four years.
Answer: *Sanpete farmers run out of water every year, not just every three to four years.
*Further, it is not Sanpete's responsibility to provide water to operate PacifiCorp's power plant. If PacifiCorp's water rights are inadequate, it is their responsibility to firm them up.
- Objection: Environmental groups have expressed that the Narrows will somehow be bad for the environment.
Answer: *Expensive, and very comprehensive mitigation plans for the Narrows will offset any perceived or real environmental impact.
*Further, a very thorough, independent engineering study (CH2MHill, August 2008) determined that the Narrows (where proposed, as proposed) is the most environmentally-friendly means of storing Sanpete's water.

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11. It is often assumed that residents of Carbon County universally and vehemently oppose the Narrows. Contrary to that assumption, there is reason to believe that a significant number of Carbon citizens feel that the Narrows should proceed. We refer to a survey conducted by the Price Sun Advocate newspaper, the week of May 4, 2010. In spite of the above-referenced (item 10 above) and other objections from Carbon County interests, the Sun Advocate's survey revealed that 17% of respondents feel the Narrows should proceed, and 10% don't care (May 11, 2010 Price Sun Advocate, page 4A). While we recognize that it is an informal survey, we feel it reveals a side of Carbon's citizenry that is seldom discussed in connection with the Narrows; i.e. some Carbon citizens favor the Narrows. Those in Carbon who wish to further delay the Narrows apparently don't represent the opinions of all Carbon citizens.

The Sanpete Water Conservancy District encourages Reclamation to:

- approve SWCD's application for an SRPA loan to construct the Narrows Project,
- approve SWCD's use of Reclamation-withdrawn lands for the Narrows Project,
- issue a favorable Record of Decision,
- grant a perpetual easement for the construction, operation and maintenance of the Narrows, and
- encourage USDA Forest Service to favorably proceed with the six items listed on page S-3 of the SDEIS.

Thank you for your considerations regarding this project that is so important to the well-being of Sanpete County.

Respectfully,



Edwin B. Sunderland
Chairman

61. SPRING CANYON IRRIGATION COMPANY, SCOTT DURRANT, PRESIDENT

AL

ORIGINAL

Crookston, Peter L

From: Cindy Durrant [cindy-durrant@hotmail.com]
Sent: Monday, May 31, 2010 4:06 PM
To: PRO NarrowsEIS
Subject: narrows project

61-1 To whom it may concern,
I am the President of the Spring Canyon Irrigation Co. of Fairview, UT. We are greatly concerned that the Narrows project will not pass, and this is very frustrating to us as a irrigation company. Every year we watch our neighbors as well as ourselves trying to raise our alfalfa and other crops and only getting one crop per summer, with no hope of a second or third crop. I wonder how many crops are the Carbon County farmers getting.

We don't understand why Carbon County farmers can get their fair share and Sanpete farmers can't. The articles that we read sounds like it should be very simple, was this not promised to us long ago?

We are all trying to raise families on this side of the mountain too, we NEED this project to happen. I think it would totally change Sanpete County for the good. We feel that the good Lord put this water on this earth to help us with our needs.

Thank you for your support.

Sincerely,
Scott Durrant
President:
Spring Canyon Irrigation Co.
R. R. 1 Box 243
Fairview, UT 84629

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Active:
Classification: ENU-10.00
Narrows
1043247
1122816

62. WALES IRRIGATION COMPANY, ROGER REES, PRESIDENT

AL

PRO OFFICIAL FILE COPY

ORIGINAL

Crookston, Peter L

From: Becky Rees [brees@cut.net]
Sent: Tuesday, May 25, 2010 9:51 PM
To: PRO NarrowsEIS
Subject: Narrows Project

Dear Mr. Crookston,

62-1 I am the President of the Wales Irrigation Company, I also serve on the Wales Silver Creek Irrigation Company board and the West Point Irrigation Company. We always run out of water later in the summer, having a steady supply of water thru the summer would be of a great help to our area. I have lived in sanpete all of my life and water has always been our biggest problem. A friend of mine served on the water conservancy board for many years. He worked really hard on getting the Narrows Project to come to pass. There have been many points of view expressed on the project but the bottom line is that it is our water and we need to have a way for it to be delivered to Sanpete County. If we could get the late water from the Narrows Project we could possibly grow a 3rd crop of alfalfa and we could utilize our pastures better because we would have water for our animals.

The people who years ago filed on that water knew how important it would be to our area. I feel that there would be many good benefits come from the Narrows Project. The dam would provide not only the water we need but would boost the local economy through recreation. Municipalities would also benefit from having the water for future growth.

It just seems that if this is our water, and there seems to be no dispute about that, we should be able to get the water. It's just wrong that Carbon County has been able to use our water all these years and has forced us to spend thousands of dollars to fight for something that should have been done 60 years ago.

If this is our water, I just don't understand why the Narrows Project is being debated at all. It's time to do the right thing and for politicians to stop pandering to Carbon County in hopes of being re-elected. I think it's also a shame that for the price of a postage stamp, environmental groups can stop the work that decent, honest men have spent years working on.

I hope you will be fair in your decision because right is right and wrong is wrong. The right thing to do is to give Sanpete County a way to get the water that is ours.

Sincerely yours,
Roger Rees

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	KS	700
6/10/10	Batt	770
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Actual: ENR - 6.00
Narrows
100 39 701
1122 816

ORGANIZATIONS

- 63. Central Utah Pioneer Heritage, Shannon D. Miller,
President**
- 64. San Pitch River Watershed Stewardship Group,
Thomas H. Shore, Watershed Coordinator**
- 65. Trout Unlimited, Michael Bertelsen, Special Counsel,
Utah Water Project**
- 66. Trout Unlimited Stonefly Society,
Frederick W. Reimherr**
- 67. Utah Rivers Council, Rosalie Woolshlage,
Staff Attorney**
- 68. Western Wildlife Conservancy, Kirk C. Robinson,
Executive Director**

**63. CENTRAL UTAH PIONEER HERITAGE, SHANNON D. MILLER,
PRESIDENT**

AL

ORIGINAL

Crookston, Peter L

From: Xmission [smiller@diveutah.com]
Sent: Monday, May 31, 2010 2:13 PM
To: PRO NarrowsEIS
Subject: In Favor of the Narrows Project

Dear Project,

63-1 As a 15 year resident of Sanpete County, I wish to express my strong opinion IN FAVOR of the narrows project.

Sanpete has long deserved the water and has long suffered without it. Our farmers need it, our conservation efforts support it and Sanpete residents are due what is ours.

For 70+ years the promise has been made to give Sanpete the water that is rightfully ours and it is now time to follow through on that promise.

The EIS supports new water development and efforts (which Sanpete has demonstrated) to conserve water. Sanpete can manage their water responsibly. Other jurisdictions need to manage their water as well and not take Sanpete's share any longer.

The legal wrangling has supported the water project and acknowledged Sanpete's right to the water, even up to the Utah Supreme Court and the US Dept of Justice.

As the 2nd poorest county in the state, the jobs and economic benefit for Sanpete created by building the Narrows project will be a great investment - one that will last for many years - even up to 100 years.

The recreation opportunities will benefit many, not just Sanpete.

Sanpete's pioneers understood the development of water and its important role in the success of a community. Sanpete has long honored Pioneer values and preserved the lessons taught by forbearers. Conservation is a strong tenet of that is understood and remembered. Sanpete has long been regarded as the county that time forgot, but the people have not forgotten the lessons learned in history nor the promises made. It is time to give Sanpete the water long promised and allow the county to continue the long history of making the most out of a limited resource.

Sincerely,

Shannon D. Miller
President
Central Utah Pioneer Heritage Association

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Classification: EIS-6.00
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**64. SAN PITCH RIVER WATERSHED STEWARDSHIP GROUP,
THOMAS H. SHORE, WATERSHED COORDINATOR**

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ORIGINAL



San Pitch
River
Watershed
Stewardship
Group

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Bureau of Reclamation
Attn. Peter Crookston
PRO-774 302 East 1860 South
Provo, UT 84606

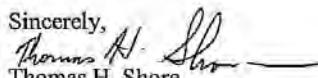
Dear Mr. Crookston:

64-1 The San Pitch Watershed Stewardship Group has reviewed the Environmental Impact Statement for the proposed Narrows Dam and Reservoir. We strongly encourage the Bureau of Reclamation to implement the Preferred Alternative calling for the large reservoir.

Sanpete County clearly owns the water rights involved. The Supreme Court and the US Department of Justice have both acknowledged Sanpete's water rights. The Utah House of Representatives and Utah State Senate passed resolutions in 2008 and 2009 to implement the project.

The San Pitch Watershed Stewardship Group has the responsibility of implementing the San Pitch River Watershed Improvement Plan. Construction of the Narrows Dam and Reservoir is vital to environmental improvement of the San Pitch River.

Sincerely,


Thomas H. Shore
Watershed Coordinator
50 South Main, Suite 2
Manti, UT 84642

cc.

Senator Orrin Hatch
131 Russell Building
Washington, DC 20510

Senator Robert Bennett
431 Dirksen Building
Washington, DC 20510

Congressman Jason Chaffetz
1032 Longworth Building
Washington, DC 20515

Congressman Rob Bishop
124 Cannon Building
Washington, DC 20515

Congressman Jim Matheson
410 Cannon Building
Washington, DC 20515

T. SHORE
50 S. Main, Suite 2
MANTI, UT 84642

**65. TROUT UNLIMITED, MICHAEL BERTELSEN, SPECIAL COUNSEL,
UTAH WATER PROJECT**



Michael J. Bertelsen
Special Counsel / Utah Water Project

58 Virginia Street
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By email: narrowsSDEIS@usbr.gov

Attn: Peter Crookston
PRO-774
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**Re: Comments of the Utah Water Project of Trout Unlimited on Narrows Project
Supplemental Draft Environmental Impact Statement, Filing No. DES 09-55**

We live in an era of crushing budget deficits, growing concern for the environment, and ever increasing cries for more limited government and local solutions. Those political realities underscore what many of those familiar with the proposed Gooseberry Narrows Project (the "Project") have long known: the costs of the project—economic, social, and environmental—far outweigh any potential benefit. For those reasons, the Bureau of Reclamation (the "Bureau") cannot reasonably decide to issue a Small Reclamation Projects Act (SRPA) loan to the Sanpete Water Conservancy District (SWCD) or grant the right to use federal lands to facilitate this ill-conceived boondoggle.

Trout Unlimited (TU) understands the long history of this project and the promise given to Sanpete County many years ago that it would one day be able to build a reservoir in the headwaters of the Price River to capture surface water and take it by transbasin diversion into northern Sanpete County. That history, however, cannot change a bad idea into a good one, nor can it ignore the sea change in federal laws and regulations that has taken place over the long intervening years.

- 65-1** There are good reasons that this project, some 70 years in the making, has never been built, and all those reasons attach with even greater force today. In short, there are better ways to provide Sanpete County with additional water. The SDEIS, however, fails to seriously consider any of these alternatives, and, instead, stacks the deck in favor of a Proposed Alternative that threatens not only the irrigation and drinking water supplies of Carbon County, but also one of Utah's premier recreational fisheries—all to deliver a relatively modest amount of late-season irrigation water to Northern Sanpete County at significant federal expense.

Conserving, protecting, and restoring North America's coldwater fisheries

Summary

TU submits that the Supplemental Draft Environmental Impact Statement (SDEIS) prepared by the Bureau suffers from the following defects:

- 65-2 • The Action Alternatives do not reflect the stated preference of the Small Reclamation Project Act (SRPA) to fund existing projects that conserve water, energy, the environment or improve water quality. Moreover, the Project may not satisfy the cost requirements necessary to qualify for a SRPA loan.
- 65-3 • The Bureau states one Purpose and Need for the Project (“to develop an irrigation and M&I supply source for users in north Sanpete County, Utah”) and then applies another, more restrictive standard (additional, supplemental storage water, available late in the season) to eliminate from formal study several more practical and cost-effective alternatives.
- 65-4 • The Bureau offers an inadequate analysis of water quality and quantity impacts for the Action Alternatives.
- 65-5 • The Bureau fails to analyze sufficiently the ability of the project sponsor (SWCD) to complete and maintain the Project.
- 65-6 • The Bureau fails to address adequately the potential impacts of climate change in evaluating the Action Alternatives.
- 65-7 • Lastly, the Bureau fails to ensure that the proposed mitigation compensates for the economic, social, and environmental harms that would be caused by the Project.

Given these failures, the Bureau has failed to satisfy the requirements of the National Environmental Policy Act of 1969 (NEPA) and cannot proceed in accord with applicable law either to approve the SRPA loan nor Sanpete's use of Reclamation withdrawn lands for the Project. Nor is the SDEIS efficient to support the Bureau and Forest Service changing their current administration of lands within the area that would be affected by the project.

65-8

Legal Standards

Small Reclamation Projects Act

The express purpose of the SRPA “is to encourage State and local participation in the development of projects under the Federal reclamation laws, with emphasis on rehabilitation and betterment of existing projects for purposes of significant conservation of water, energy and the environment and for purpose of water quality control, and to provide for Federal assistance in the development of similar projects in the seventeen western reclamation States by non-Federal organizations.” 43 U.S.C.A. § 422a (emphasis added).¹

¹ Congress amended the SRPA in 1986 to add the underscored language. *See id.*, Public Law Historical and Statutory Notes; Pub.L. 99-546.

The act further specifies that “[t]he maximum allowable estimated total project cost of a proposal submitted during any given calendar year shall be determined by the Secretary using the Bureau of Reclamation composite construction cost index for January of that year with \$15,000,000 as the January 1971 base.” 43 U.S.C. § 422b(f). According to the Bureau’s own calculations, that means total project cost must be less than “about \$50 million in today’s dollars” to remain eligible for funding under SRPA. SDEIS at 2-58.

National Environmental Policy Act (NEPA)

NEPA represents the Nation’s sweeping commitment to “prevent or eliminate damage to the environment and biosphere.” *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1989). The statute accomplishes this goal by “focusing government and public attention on the environmental effects of proposed agency action.” *Id.* By doing so, NEPA “ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.” *Id.*

The sweeping policy goals announced in §101 of NEPA are realized through a set of action-forcing procedures that require that agencies take a “hard look” at environmental consequences before resources are committed. *Id.* at 350-51.

NEPA requires all federal agencies to prepare an environmental impact statement (EIS) prior to major federal action significantly affecting the quality of the environment. 42 U.S.C. § 4331; *Robertson v. Methow Valley Citizens*, 490 U.S. 332, 348 (1989). An EIS must include a detailed statement of (1) the environmental impact of the proposed action; (2) any adverse environmental effects which cannot be avoided should the proposal be implemented; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long term productivity; and (5) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. *Id.* at 348-9 (citing 42 U.S.C. § 4332).

NEPA requires federal agencies to evaluate the “direct,” “indirect,” and “cumulative” impacts of a proposed federal action. *Id.* at § 1508.25(c); *see also id.* at §§ 1508.7, 1508.8. Direct effects are those that “are caused by the action and occur at the same time and place.” *Id.* at § 1508.8(a). Indirect impacts are those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” *Id.* at § 1508.8(b). A project’s “cumulative impact” is as follows:

[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Id. at § 1508.7; *see also Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379 (9th Cir. 1998) (with respect to a cumulative impacts analysis, an agency must provide “some quantified or detailed information” because “[w]ithout such information, neither courts nor the public . . . can be assured that the [agency] provided the hard look that it is required to provide”).

Information provided in an EIS must be of high quality and must include accurate scientific analysis. 40 C.F.R. § 1500.1(b). “The NEPA process is intended to help public officials make decisions that are based on understanding environmental consequences, and take actions that protect, restore and enhance the environment.” 40 C.F.R. § 1500.1(c). “When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.” 40 C.F.R. § 1502.22. If the information cannot be obtained because the overall costs would be exorbitant or the means to obtain the information unknown, the agencies must explain the relevance of the incomplete or unavailable information, provide a summary of existing credible evidence, and evaluate the impacts based on theoretical approaches or research methods generally accepted in the scientific community. 40 C.F.R. § 1502.22(b).

To fulfill the essential purposes of NEPA, federal agencies are required, to the fullest extent possible, to “use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.” 40 C.F.R. § 1500.2. These means include (1) avoiding the impact altogether by not taking the action; (2) minimizing the impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; (5) compensating for the impact by replacing or providing substitute resources or environments. 40 C.F.R. § 1508.20. Mitigation measures must be fully discussed in the EIS. 40 C.F.R. § 1502.14(f) and 40 C.F.R. § 1502.16.

Discussion

- 65-9 (1) **The Action Alternatives do not reflect the stated preference of the Small Reclamation Project Act (SRPA) to fund existing projects that conserve water, energy, the environment or improve water quality. Moreover, the Project may not satisfy the cost requirements necessary to qualify for a SRPA loan.**

While the express intent of SRPA is to emphasize “rehabilitation and betterment of existing projects for purposes of significant conservation of water, energy and the environment and for purpose of water quality control,” 43 U.S.C. § 422a, the Project offers none of these benefits, and, in fact, represents a new-dam and dramatically expanded transbasin diversion that attempts to hide adverse effects to water quantity, water quality, and the broader environment by shifting them around and pointing to mitigation measures that cannot possibly compensate for a variety of real harms.

At best, the Project robs Peter to pay Paul, promoting new water supplies for Sanpete County at the expense of both the quantity and quality of water available to Carbon County. Similarly, the project offers new recreational benefits to San Pete County, but only at the expense of existing recreational opportunities in Carbon County.

Additionally, the Project may not meet the cost criteria that would render it eligible for a loan under the SRPA. As the Bureau itself recognizes, to be eligible for funding under the SRPA, “total project costs must be under \$15 million indexed from 1956 to the present or about \$50 million in today’s dollars.” SDEIS at 2-58. Although the Bureau estimates that the Proposed Action Alternative (large reservoir) would cost \$40.3 million to complete (*see, e.g.*, SDEIS at 2-31), the only other available study, completed by CH2M Hill in 2008, estimates a total project cost of **\$57.8 million, exclusive of land acquisition**. CH2M Hill also projects that the cost for simply rehabilitating the existing tunnel would be \$1.5 million, but to enlarge it as is contemplated by the Proposed Alternative would cost \$2.6 million. This means that, should the CH2MHill study be deemed credible, as both the Bureau and SWCD vociferously insist that it must, the Narrows Project would cost substantially more than \$61.4 million once SWCD purchases the land necessary to complete the project—well in excess of the Bureau’s stated cap of “about \$50 million dollars.”²

- 65-10 The Bureau has made no effort to reconcile these competing numbers, leaving substantial uncertainty as to whether SWCD would qualify for a SRPA loan at all.

(2) The Bureau states the Project’s Purpose and Need broadly, but then applies a conflicting and impermissibly narrow standard to eliminate several reasonable (and more cost-effective) alternatives.

According to the SDEIS, the Purpose and Need for the Project is “to develop an irrigation and M&I supply source for users in north Sanpete County, Utah whereby the average annual shortages to irrigators in the project area might be reduced as nearly as possible to 5 percent (%), which is considered full irrigation supply for Reclamation projects.” *Id.* at 1-6 (emphasis added). When it comes to *applying* that standard, however, the Bureau uses a much narrower litmus test that effectively precludes anything but the Proposed Action Alternative. *See, e.g., id.* at 2-43 (dismissing a direct diversion alternative because it fails to provide “irrigation water when it is needed during the mid- and late-summer months” and because the alternative cannot provide an instream flow requirement that presupposes that the project will be built) (emphasis added); *id.* at 2-49 (rejecting a conservation alternative because the alternative does not “adequately satisfy the need for additional supplemental irrigation water”) (emphasis added).

If the Purpose and Need of the Project is to provide Sanpete residents with irrigation and M&I water (a reasonable overarching goal) then the Bureau cannot reasonably reject plausible alternatives out-of-hand on the grounds that the alternatives do not achieve that purpose in a particular and narrowly drawn way. First, the Bureau identifies ‘develop[ing] an irrigation and M&I supply source’ as the overarching objective, then tries to narrow that further by saying the purpose is to “reduce irrigation shortfalls,” and further still to meet a 5% shortfall threshold. Such arbitrary application of shifting and even conflicting standards is precisely the kind of agency action that NEPA was designed to prevent.

² In considering these competing estimates, we note that the Bureau’s Provo Office has consistently underestimated the cost of other projects in the area. So, for example, the Bureau originally estimated the cost of the Scofield Dam seismic upgrade to be approximately \$3 million. The final costs, however, were approximately \$7.5 million. Similarly, though upgrades and repairs needed at the Scofield spillway were estimated at \$6 million, costs have already exceeded \$11 million and the project is not yet complete. *See Bureau of Reclamation, Scofield Dam - SOD Contract & Non-contract Costs - Total to Date* (March 31, 2010).

So, while federal agencies may give deference to an applicant's stated purpose and need, agencies must look more broadly to ensure consideration of reasonable alternatives. *See Citizens Committee to Save our Canyons v. U.S. Forest Service*, 297 F.3d 1012, 1030-31 (10th Cir. 2002).

65-11 More importantly, an agency cannot, as here, define objectives so narrowly as to preclude the reasonable consideration of alternatives. *See Davis v. Mineta*, 302 F.3d 1104 (10th Cir. 2002); *see also Simmons v. Corps of Engineers*, 120 F.3d 664, 666 (7th Cir. 1997) (holding that the Army Corps "defined an impermissibly narrow purpose" and "therefore failed to examine the full range of reasonable alternatives and vitiated the EIS"). Lastly, the analysis of potential alternatives does not reflect a mere aspirational standard; rather, "[t]he alternatives requirement is the linchpin of NEPA, and the alternatives section is 'the heart' of the EIS. *Wyoming v. U.S. Dep't of Agriculture*, 570 F.Supp.2d 1309, 1336 (D. Wyo. 2008); *see also* 40 C.F.R. § 1502.14 (identifying the alternatives analysis as the "heart" of NEPA).

Here, the SDEIS falls woefully short of the kind of careful consideration of alternatives required by NEPA. In the end, the SDEIS gives consideration to only four, formal alternatives: The Proposed Alternative (large dam), a Second Alternative (medium sized dam), a Third Alternative (small dam), and a No Action Proposal. Numerous other alternatives are dismissed summarily, often based on little more than the agency's own *ipsi dixit*. *See, e.g., id.* at 2-60 (dismissing a groundwater pumping alternative because drawdown "could affect" adjacent wells).

In fact, many of these alternatives offer to deliver on the broad purpose and need articulated by the Bureau—reduced average annual shortages for irrigators in north Sanpete County—at far less cost and with far fewer social or environmental impacts.

More specific problems with the Bureau's analysis of the alternatives are described below:³

	Section	Statement	Analysis
65-12	2.3.1 – Direct Diversion w/o Reservoir (p. 2-43)	Dismisses an alternative because it does not have "fish and wildlife benefits" that would make the project eligible for additional grant money. As a result, "total project cost would be borne by the water users." Also suggests annual pumping costs of \$7200 would be too high.	<ul style="list-style-type: none"> The fish and wildlife "benefits" touted in the SDEIS are illusory (merely offsets for other harms), and apparently designed less for their actual benefit than as convenient hooks to help subsidize an otherwise exorbitantly expensive project. At \$7200/year, it would take nearly <u>four thousand years</u>(!) to make up the difference in cost between the estimated \$12 million dollars for this alternative and the Bureau's low estimate of \$40M for the Proposed Action Alternative.
65-13	2.3.2 – Conservation w/o Development of Other Water Supplies (p. 2-47, 48)	Dismisses alternative because, in the Bureau's narrow application of "need," water made available through conservation does not equal the "new" source of water contemplated by the DEIS. States, without more, that "due to the	<ul style="list-style-type: none"> Applies criteria arbitrarily and inconsistent with the broad statement of need to reduce water shortages for irrigators based on annual averages. Fails to address whether an outlay of \$40M would make leveling more practical or

³ These specific comments are intended to show examples rather than document a comprehensive list of questionable statements and assertions in the SDEIS.

65-14

	topography and shallow depth of the soil, land leveling is generally not practical or economically feasible in the project area.”	economically feasible.
2.3.5 – Valley Damsite Alternative (p. 2-51)	“Lacking modification to the 1984 Compromise Agreement, the applicant would not be able to secure the water rights necessary to establish project water supplies as required by SRPA.”	<ul style="list-style-type: none"> • Presupposes—in error—that revisiting the 1984 Compromise Agreement is impossible, even though Carbon County has offered repeatedly to renegotiate the Agreement if revisiting the Narrows Project is on the table.
2.3.7 – Year Round Release w. Groundwater Exchange Pumping Alternative (p. 2-55)	<p>Annual pumping costs estimated at \$52/acre foot, plus initial project costs of \$6.5 million. <i>Id.</i> § 2.3.7 at 2-55.</p> <p>Dismisses this alternative because “[a]nnual costs far exceed the sponsor’s repayment capacity and other available resources as needed to maintain eligibility for SRPA funding.” <i>Id.</i> § 2.3.7.1 at 2-55.</p> <p>The SDEIS contains conflicting statements about the “average annual cost” of water under the proposed alternative. In one place, the cost is estimated at 1.07 times the cost of the Proposed Action Alternative, <i>id.</i> § 2.3.7 at 2-55; in another, at 1.75 times that cost. <i>Id.</i> at § 2.3.7.1 at 2-56.</p>	<ul style="list-style-type: none"> • At \$52 per acre foot, the cost savings relative to the Proposed Alternative could pump nearly 650,000 acre feet of water, enough to meet the “purpose and need” stated in the SDEIS for 120 years. • Unclear how the costs of this alternative “far exceed the sponsor’s repayment capacity” when the Bureau calculates the total cost of this alternative at 1.07 times the cost of the Proposed Action Alternative. • The Bureau rejects this alternative based, at least in part, on an apparent typographical error. <i>See id.</i> § 2.3.7.1 at 2-56.

(3) The Bureau offers an inadequate analysis of water quality and water quantity impacts for the Action Alternatives.

The Bureau has failed to address serious water quality impacts in the Project Area, impacts that undermine the justification for the Project.⁴

The SDEIS readily concedes a range of potential adverse water quality impacts associated with the Proposed Action Alternative. Those impacts include:

- Degradation of existing water quality in the current nondegradation segments of project area streams during construction
- Potentially decreased DO levels and increased fishkills in Lower Gooseberry Reservoir due to decreased inflow

⁴TU addresses water quality issues here because water quality issues figure prominently in the SDEIS and play an important role in the Bureau’s Project review. Having said that, TU recognizes that water quality protection plays a its most critical role in the context of U.S. Army Corps of Engineers (USACE) section 404 permitting and the State of Utah’s 401 certification and anti-degradation review, which TU will address in greater detail in comments submitted to USACE next week.

- Increased potential for fishkills in Scofield Reservoir as a result of possible decreases in water quality due to reduced inflows
- Increase in average salinity levels in the Colorado River at Imperial Dam of 0.54 mg/L due to an average annual depletion of 5,597 acre-feet

Id. at 3-54.

In particular, the SDEIS recognizes that Scofield Reservoir already suffers from water quality problems. The reservoir is often at or near a eutrophic state—in other words, it suffers from excessive nutrients tied to too much phosphorus in the water, a situation that leads to algae blooms and low oxygen levels in the water, a situation that often leads to fish kills, particularly during low water and/or the hot summer months.

Using the Trophic State Index (TSI),⁵ a common measurement for nutrient loading, the Bureau calculates an average TSI for Scofield of 47.1 for the period 1981-2007. *See* SDEIS Table 3-15 at 3-48; *see also* text at 3-49. A fully eutrophic system occurs at a level of 50 TSI or higher. Thus, Scofield sits perilously close to designation as fully eutrophic. Further, water quality studies conducted back in 1990 show blue-green algae comprised 99% of all taxa present, another related indicator of poor water quality conditions.⁶

65-15 The Utah Department of Water Quality (UDWQ) listed Scofield as impaired for excess total phosphorus and low DO in 1998.⁷ UDWQ developed a TMDL for Scofield in 2000, which specifies that overall phosphorus loading in Scofield must be reduced by 1,881 kg/yr,⁸ a standard that assumes that current water levels and flushing rates are maintained. By the Bureau's own calculations, however, the Proposed Action Alternative would reduce the average size of Scofield Reservoir from 42,360 to 31,500 acre feet – a reduction of 26%, and one with serious implications for phosphorus loading and other water quality problems. *See* SDEIS § 3.3.3.2 at 3-16.

65-16 Nor has the Bureau conducted any study or other evaluation of how reduced flows into Scofield will impact water temperature—another important indicator of water quality, particularly when it
65-17 comes to supporting coldwater fish like trout. Even though warmer water is more conducive to plant and algal growth⁹, *no studies have been done to estimate the impact a 26% reduction on average reservoir size would have on average water temperatures, eutrophication and fish kills.*

⁵ TSI “is a general measure of the level of eutrophication in a reservoir....TSI values greater than 50 are indicative of a eutrophic system, and TSI values between 40-50 are indicative of a mesotrophic system.” UDEQ, *Scofield Reservoir TMDL (2000)* (attached as Exhibit A).

⁶ Judd, H.L. 1990. *Scofield Reservoir Restoration Through Phosphorous Control*, Dept. of Environmental Quality, Utah Div. Of Water Quality.

⁷ *Scofield Reservoir TMDL* at 5.

⁸ *See* SDEIS § 3.5.1.3 at 3-50; *see also* *Scofield Reservoir TMDL* at 1.

⁹ *A kinetic approach to the effect of temperature on algal growth*. Goldman & Carpenter, Woods Hole Oceanographic Institution 1973 (attached as Exhibit B).

None of this suggests that the Bureau has met its obligations under NEPA to “use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.” 40 CFR §1500.2.

65-18 The Bureau has failed to address negative effects on water quantity within the project area and the implication of the reduced reservoir volumes on municipal, industrial, and agricultural water supplies as well as fisheries and other recreation values.

As the Bureau itself admits, under the Proposed Alternative, “Scofield Reservoir would operate at a lower level,” consequently, “there is an increased potential for the reservoir to be drained to the bottom of its active storage. *The frequency of this occurrence increases from 3 times in 43 years to 12 times in 43 years with the proposed Action.*” SDEIS § 3.3 at 3-12 (emphasis added). This quadrupling of the risk of having Scofield run out of active storage has serious implications for (1) PacifiCorp and other businesses that rely on flows below the Reservoir, (2) Carbon County citizens, who rely on Scofield for their drinking water, (3) agricultural producers in Carbon County who rely on Scofield for irrigation, and (4) the large number of recreational users—including cabin owners, fishermen, and boaters—who rely on Scofield for the excellent recreational opportunities it provides.

To these concerns, the Bureau says, in essence, “too bad,” and suggests that all those who have benefited from increased storage in Scofield are essentially free riders, who have enjoyed a windfall to which they would not otherwise be entitled. *See generally* SDEIS § 3.3.3.2 at 3-19 (“Figure 3-2 also shows that there would be no minimum pool for fishery in Scofield Reservoir had it not been enlarged.”). This attempt to view the Proposed Alternative solely through the lens of a 1940s-era agreement ignores the complex history of the dispute between Sanpete and Carbon Counties, the likelihood that the Scofield dam would have been raised in the 1940s regardless, the dramatic changes we have seen in the intervening years in federal funding, environmental review, and other areas of law, and, perhaps most importantly, the real harms this project threatens to the citizens of Carbon County.

This constricted view allows the Bureau to tout the Proposed Action Alternative as *the only possible solution*, despite the real damage it threatens to water quality and water supply and the many citizens of Utah who have come to rely on both.

Again, this narrow, hide bound perspective does not suggest that the Bureau has met its obligations under NEPA to “use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.” 40 CFR §1500.2.

65-19 (4) The Bureau fails to analyze sufficiently the ability of the project sponsor (SWCD) to complete and maintain the Project.

According to its 2005 audited financial statement (the most recent financial statement available at this writing), the SWCD had no full-time employees. It typically spent nearly 60% of its budget on operating expenses and the remainder “for capital additions on the narrows (sic) project in upper Gooseberry, east of Fairview, Utah.”¹⁰ With annual revenues of less than \$400,000, this means SWCD would have \$150,000 left in its annual budget to service debt and to conduct all other components of the project as outlined in the SDEIS. Its average expenditures on Narrows project costs over the period 2002 to 2005 were approximately \$78,000 per year. In 2005 it spent \$70,000 on public relations for the project, and another \$83,000 on legal and engineering fees—also largely attributable to the Project.

As set forth in the SDEIS, the district would be given direct responsibility for the acquisition, maintenance, construction, oversight, and operation of the numerous project components, all of which are legally mandated and critical to the successful operation of the Project. These responsibilities include, but are not limited to:

- The purchase of 220 acres of land adjacent to Mud Creek in Carbon County;
- Fencing of 11 miles of stream on the Price River below Scofield Reservoir (and, presumably, maintaining those fences);
- Purchasing 640 acres of land adjacent to Fish Creek in Carbon County;
- Funding and maintenance of all wetland mitigation proposed for the project in Carbon County, as well as proposed off-site mitigation in Sanpete County;
- Primary responsibility for all wildlife measures described in chapter 2 of the SDEIS, which in turn include:
 - Improvement & maintenance of 9.5 miles of stream segments,
 - Fencing and planting of additional riparian habitat in addition to that listed above; and
 - Primary responsibility for implementing all fisheries measures, acquiring all lands and rights of way necessary to execute the project as described in the SDEIS;
- Providing native seed for watershed and range improvement projects defined in the proposed mitigation; and
- Full funding and construction cost for all improvements, including financing for range improvements on USDA Forest Service land.

Again, SWDC would bear full responsibility to fund monitoring, as well as any adjustments, repairs, and upgrades to all of the above-listed structures or programs in perpetuity.

¹⁰ *Sanpete County Water Conservancy District Financial Statements*, December 31, 2005 (attached as Exhibit C).

65-20 The task of maintaining phosphorus reduction measures has proven daunting for UDWQ, a fully-funded state agency charged with development and maintenance of water quality and wildlife protection measures. If the Narrows project were completed as described in the SDEIS, the Bureau would be handing over to SWCD, with virtually no resources, plenary control over all mitigation for the Narrows Project in spite of the obvious fact that SWCD has no vested interest in the success of mitigation efforts in Carbon County, and will have no reason to fund or maintain structures there once the Narrows Project is built. The SDEIS considers none of this, nor does it describe how the Bureau would ensure accountability for completion of all mitigation.

An overview of the proposed financial aspects of the Project makes matters even worse.

The SDEIS shows SWCD cannot adequately service Project debt. A closer look at the numbers reveals clearly that the annual budget of SWCD cannot service interest and principal repayments on the project, even if one adds in the incremental value of new water the project might deliver. Importantly, the vast preponderance of water from the project will go to irrigation. Consequently, the value of an incremental crop yield based upon completion of the project is relatively small, and new debt service based upon this revenue source is minimal, at best.¹¹

The bottom line is that the SRPA program cannot make a loan in excess of approximately \$50 million, and this Project, which may well exceed that amount based on studies to which SWCD was itself a party, should not be shoehorned into a program that does not fit. Nor should the Bureau bless a project with such little transparency in terms of how the project sponsor will execute all the necessary requirements of the loan.

65-21 **Lastly, the SDEIS assumes funding from other sources that are either speculative or no longer exist.** As described in the SDEIS, SWCD and the Bureau hope to squeeze the Narrows Project into the SRPA program by assuming that they will obtain at least two additional, major funding sources. First, they hoped to obtain from U.S. Senator Bennett, the ranking minority member of the Energy & Water Subcommittee of the Senate Appropriations Committee, an earmark of \$12 million in federal funding specifically for the project. Since Senator Bennett will be leaving the Senate at the end of the year, a Congressional earmark for the Narrows is unlikely to materialize.

Second, project proponents seek to get bonding for an indeterminate sum of money to complete the project beyond what they might obtain from SRPA. Nevertheless, SWCD has no current bonding authority, no rating from any recognized rating agency, and, as noted above, does not have the revenue stream to service a bond of the size needed to accomplish the Project.

Third, hopes of obtaining unobligated money from the State of Utah's Water Resources Conservation and Development Fund are questionable at best. Two large, high profile water projects—the Lake Powell Pipeline and the Bear River Project—sit at the top of the State's

65-22 ¹¹ In that regard, TU believes that the financial analysis in the SDEIS regarding SWCD's ability to pay is inadequate, particularly where the expenditure of federal funds is concerned. Therefore, to the extent that this information should be part of the public record, TU may pursue this information through all available and lawful means.

priority list for this fund. Moreover, the fund is only available to entities who can repay the full loan amount, as it is a revolving fund, which depends upon repayment of project funding to continue to operate. As is clear from an analysis of the cost estimates, SWCD has a limited ability to service debt, especially considering the increased liability SWCD would have for land acquisition, mitigation costs and additional ongoing maintenance and monitoring.

Finally, in every significant aspect, the Narrows Project would encourage the opposite policy from those that SRPA is designed to promote. Specifically, the SRPA values conservation, but the Narrows would increase water for irrigation without any requirement that water delivered be used efficiently on farms that have demonstrated best conservation management practices. Second, SRPA funding is supposed to go to projects that conserve the environment, yet the Narrows would cause significant adverse effect to the environment, threatening Utah's third best flat water fishery, and providing mitigation in the form of two smaller, mediocre reservoir sport fisheries. Finally, while the SRPA seeks to fund projects that conserve water quality, the SDEIS reveals, unequivocally, that the Narrows will worsen water quality, both for one of Utah's top reservoir fisheries, and also for Carbon County's drinking water.

65-23 (5) The Bureau fails to address adequately the potential impacts of climate change in evaluating the Action Alternatives.

Federal agencies and NGOs alike must increasingly deal with the potential implications of climate change, a reality that the Bureau itself has recognized recently. *See Literature Synthesis on Climate Change Implications for Reclamation's Water Resources* (September 2009), available at: <http://www.usbr.gov/research/docs/climatechangelitsynthesis.pdf>.

While the Bureau offers lip service to the importance of this issue, it dismisses it with the cursory observation that "without verified models addressing climate change at this project level, Reclamation concludes that, at this time, data and modeling tools are not yet developed to the point that meaningful analysis of a small project can be achieved." SDEIS at 1-25.

The lack of a project specific model, however, should not excuse the Bureau from evaluating the Proposed Action and Alternatives in light of the following:

- Impacts of climate change for annual precipitation in the project area;
- Temperature changes likely to occur within Scofield Reservoir and likely effects;
- Impacts of climate change on threatened and endangered Colorado River species, and the likelihood of any Proposed Action to enhance or exacerbate such impacts;
- The degree to which climate change impacts can or should affect the Statement of Purpose and Need, and specifically whether the delivery of water contemplated by any Proposed Alternative is:
 - (1) Reasonable in light of current and future uses of available water;
 - (2) Likely to achieve stated goals (e.g. 95% irrigation service); and
 - (3) Possible given the amounts of water likely to move through the Price River headwaters on an ongoing basis, either with or without the diversion.

See generally Center for Biological Diversity v. Kempthorne, 588 F3d 701, 710 (2009) (“An agency’s blanket statement that it has considered all evidence is ineffective where the analysis makes clear that a crucial issue has been overlooked.”).

To be clear: the relevant nexus here is not of TU’s making, but rather comes from the agency itself. After all, the SECURE Water Act (P.L. 111-11 Subtitle F (2009)) requires the Bureau to incorporate climate change into its water planning efforts. Similarly, in 2007, the Bureau’s Climate Change Work Group issued Appendix U, a report that addressed how Reclamation can incorporate climate change information into Colorado Basin planning studies. *See Bureau of Reclamation, Climate Technical Work Group, Appendix U: Review of Science and Methods for Incorporating Climate Change Information into Reclamation’s Colorado River Basin Planning Studies* (August 21, 2007);¹² The impacts identified in that document played a role in the Bureau’s decision regarding Colorado River shortage criteria. In other words, the Bureau itself has recognized a commitment to conduct a meaningful analysis of climate change impacts—particularly in the Colorado River Basin—and the agency cannot hide behind a lack of project-specific climate modeling by the Bureau itself to avoid conducting any analysis at all.

65-24 (6) Lastly, the Bureau fails to ensure that the proposed mitigation compensates for the economic, social, and environmental harms that would be caused by the Project.

The biggest failure of the SDEIS is a failure of mitigation: suggesting that the creation of a new, small headwater impoundment will compensate for the potential loss of one of Utah’s premier flatwater fisheries, or that a little bank stabilization on private land will compensate for increased phosphorus and nutrient loading, that benefits here will always cancel out negative effects there in a kind of perfect harmony.

The sad reality is that no mitigation can compensate adequately for the potential damage this Project will inflict on the lives and livelihoods of people downstream. Although Sanpete County has the right to develop additional water supplies, it cannot do so in this way and at such great a cost, costs to be born by the citizens of another county and the many other Utah citizens who recreate there.

The mitigation that the Bureau proposes in the SDIES related to water quality impacts illustrates the flawed logic of the overall mitigation proposal, but it is only the tip of the iceberg. While the SDEIS describes the serious water quality impacts that would occur as a result of the Narrows, it proposes only token mitigation as compensation. Moreover, while the Bureau seems all too ready to discount potential alternatives as speculative or uncertain, it readily embraces speculative and uncertain mitigation as more than sufficient to compensate for Project impacts.

65-25 For example, the Bureau asserts, with little or no critical analysis, that stream bank stabilization and other improvements on Mud Creek can and will compensate for higher concentrations of phosphorus in Scofield Reservoir, even though the Bureau readily admits that similar efforts have failed in the past. *See id.* at S-16. Further, the Bureau concedes that pursuing this option would require either SWCD acquiring private lands or obtaining permission to do major

¹² Available online at: <http://www.usbr.gov/lc/region/programs/strategies/FEIS/AppU.pdf>.

reconstruction on private lands, *see* S3.11 at S-31, a prospect that is by no means certain. Cf. SDEIS at 2-59 (rejecting a proposed alternative because “[t]he concept of land retirement also presupposes that there are willing sellers and willing buyers of land, forbearance, or water rights”). At one point, the Bureau goes even further, stating—without one shred of supporting documentation—that “[i]t is anticipated that, by removing livestock [along Mud Creek], the wetland vegetation would return on its own with little or no other outside measures.” SDEIS at 3-66. Mere “anticipation” or “supposition” is no substitute for the kind of rigorous and thoughtful analysis NEPA requires.

Unfortunately, this pattern of band-aid mitigation is repeated again and again over the course of the SDEIS, often by using data selectively. For example, the SDEIS cites State Park visitation data as the basis for evaluating recreational use on Scofield Reservoir. *See* SDEIS at 3-74 (“Scofield State Park receives an annual visitation of about 105,200 visitors. Annual revenues approach \$98,400.”) Only by selectively citing data in that way can recreational use at the much smaller and more remote Joe’s Valley Reservoir be deemed “comparable” to that at Scofield. The problem is, however, that *the two State Park facilities at Scofield account for only a small fraction of recreational use at the Lake, recreational use that includes at least three major cabin developments and miles of shoreline—all heavily used—that are nowhere near the two relatively small state park facilities.* In fact, much of the recreational use in the lake occurs in winter, when the State Parks are not even open.

The SDEIS fails to propose adequate mitigation for adverse impacts to the Scofield Reservoir Fishery and Lower Fish Creek.

Whatever the purported “studies” may say, it defies both reason and experience that a 200-acre headwater impoundment will replace the number of angler hours lost on Scofield Reservoir, a Utah Blue Ribbon Fishery, *see* <http://wildlife.utah.gov/blueribbon/waters/scofield.php>, with of approximately 2800 acres and 29 miles of shoreline at full capacity, and one the SDEIS itself recognizes as the “the third best flat-water trout fishery in the State.” SDEIS at 3-35. The new reservoir, by contrast, would be small, (+/- 600 acres when full) and would regularly empty to approximately 150 acres. It would also be located at a high elevation, and will therefore be frozen for more of the year, reducing usable days for fishermen and boaters. *See* SDEIS § 3.8.1.3.2 at 3-77. Nor does the SDEIS spend much time considering potential impacts to Lower Fish Creek, an important and high-use stream fishery below Scofield Dam.

In addition to the fishery, Scofield Reservoir also supports domestic, recreational and agricultural uses. All of this underscores the need to protect this vital resource, and cast doubt on a Proposed Action Alternative that would, admittedly, degrade water quality, accelerate eutrophication and otherwise threaten this precious resource. *See, e.g., id.* at 3-77 (“Under the Proposed Action, more frequent fishkills and accelerated eutrophication also could degrade the park.”).

- 65-26 Other estimates in the SDEIS suggest an average reduction in the size of Scofield as a result of the Narrows project vary between 9% and 26%. Nevertheless, anticipated phosphorus reduction under the mitigation for water quality proposed under the Proposed Action is approximately 105 kg/year, *id.* § 3.5.2.2 at 3-55, *only 5% of the necessary reduction to the loading that takes place at current water levels.*

65-27 The SDEIS estimates an increase of nearly 11% in phosphorus in-lake concentration as a result of the Narrows project, *id.* § 3.5.3.2.2 at 3-55, and further states that critically low flushing rates would occur 17% more frequently. *See id.* (“During these periods of critical flushing rate, the probability of fish kills would be somewhat higher.”).

65-28 While recognizing these impacts, the Bureau consistently downplays them—often based on supposition or “professional judgment” rather than hard data—and suggests that mitigation in other areas will more than compensate. *See, e.g.,* SDEIS § 3.5.3.2.2 at 3-56 (“Taking into account the slight increase in in-lake phosphorus concentration and essentially no change in flushing rate, professional judgment would indicate that the overall water quality in Scofield Reservoir would be degraded only slightly by the Proposed Action without Mitigation. Mitigation measures to offset this potential impact are described in section 3.5.3.2.6.”)

Nevertheless, an examination of Section 3.5.3.2.6 shows that most of the proposed mitigation is nothing but minor revisions to a 6.5 mile section of Mud Creek, a tributary to Scofield that contributes only 29% of the total nutrient input into the reservoir.¹³

65-29 This proposed mitigation is problematic on a number of levels. First the property through which the property flows would have to be purchased from private owners, a costly and uncertain prospect. Second, in many places Mud Creek remains a deeply incised channel with little or overhead cover. The proposed mitigation, however, is the “installation of a series of check dams to raise the water level.” SDEIS § 2.2.2.2.4.1 at 2-22, 2-26. No number of such dams is proffered, and discussions of channel are limited to the following statement: “Some minor recontouring may be required at the site.” *Id.* at 2-26.

65-30 The SDEIS also recommends proceeding with the project before any realistic analysis has been done with respect to the effectiveness of the proposed mitigation. There is little or no hard data to suggest the approach will deliver the promised benefits, particularly in areas where, as the SDEIS admits, similar efforts have failed in the past.

65-31 TU strongly believes that unbiased and realistic “professional judgment” would indicate that the numbers, on their face, suggest potentially catastrophic consequences of even a minor reduction in water quality. In other words, a small change may have an enormous impact, and yet the proposed mitigation ignores this “tipping point” problem and assumes, without more, that the impacts will be modest and the proposed mitigation successful.

The SDEIS Lacks Adequate Considerations Regarding Public Safety

The only issue of public safety addressed in the SDEIS is increased road traffic on the state highway adjacent to the proposed new reservoir. Nevertheless, the document itself gives examples of clear and present dangers that present themselves on the Carbon County side when water levels drop in Scofield:

An example of this type of problem occurred during 1992. The lowest water surface elevation at Scofield Reservoir that year was 7,5876 feet with a reservoir captive capacity

¹³ *Scofield Reservoir TMDL* at 4.

of 1,102 acre feet. A major concern was that the reduced water level would lower water temperature, causing ice to form on the lake. This caused the potential for a blockage at the site of the old dam near the middle of the reservoir, not allowing water to pass from the upstream portion of the reservoir to the dam. Channel improvements and an electrical system to prevent freezing around the outlet structures were put in place. Other measures were put on standby in case reservoir levels dropped lower. The crises were finally averted by restricting reservoir releases, ration[ing] irrigation water, eliminating the use of water for lawns and yards, and monitoring water tank levels downstream in Carbon County. While such drought periods are not frequent, they do have significant impacts and would occur more often with implementing the proposed project.

SDEIS § 3.3.3.2 at 3-18. Despite this recognition, the SDEIS addresses no public safety concerns aside from road use issues.

65-32 Scofield remains the primary culinary water source for most of Carbon County's population. Any reduction in volume to this water supply has direct and possibly catastrophic impacts downstream, none of which are addressed in the SDEIS beyond a vague suggestion that Carbon County residents would be out of luck, since the M&I and irrigation water in question was not guaranteed before Scofield dam was raised in the 1940s. *See generally* SDEIS § 3.3.3.2 at 3-19 ("Figure 3-2 also shows that there would be no minimum pool for fishery in Scofield Reservoir had it not been enlarged."). This historic fact, however, cannot trump the present reality that many Utah citizens rely on Scofield not only for recreation, but for irrigation, industry, and drinking water.

65-33 For all these reasons, the SDEIS fails to meet the requirements of NEPA, and the Bureau should not move forward with any of the Proposed Alternatives. The concept remains flawed, the proposed mitigation fundamentally inadequate, and there are far better ways to provide a modest additional supply of irrigation and M&I water to Sanpete County that do not threaten existing and vital water supplies and water resources in Carbon County.

Respectfully submitted,

Michael J. Bertelsen
Trout Unlimited

EXHIBIT A

UDEQ, *Scofield Reservoir TMDL (2000)*.



**Utah Department of Environmental Quality
Division of Water Quality
TMDL Section**

Scofield Reservoir TMDL

Waterbody ID	Scofield Reservoir, HUC 14060007
Location	Carbon County, Central Utah
Pollutants of Concern	Total Phosphorus, Dissolved Oxygen
Impaired Beneficial Uses	Class 3A: Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.
Loading Assessment Current Load TMDL Target Load Load Reduction	6,723 kg/year total phosphorous 4,842 kg/year total phosphorous 1,881 kg/year or 28%
Defined Targets/Endpoints	1) Shift in phytoplankton dominance from blue-green algae 2) DO level of no less than 4.0 mg/L in 50% of water column 3) TSI values between 40-50
Implementation Strategy	1) Stream restoration BMP's 2) Elimination of grazing below

	high water line of reservoir

Executive Summary

This document is identified as a TMDL for Scofield Reservoir and is officially submitted to the U.S. EPA to act upon and approve as a TMDL for the State of Utah, Department of Environmental Quality (DEQ), Division of Water Quality (DWQ). Scofield Reservoir is a 2,815 acre body of water located in western Carbon County. The watershed is located in Hydrologic Unit Code (HUC) 14060007 and the uses are quite diverse and consist of year-round fishing, agriculture, and coal mining.

Scofield Reservoir is listed as impaired for 3A, cold water fishery. Parameters of concern are total phosphorous concentrations, low winter dissolved oxygen (DO) concentrations and nuisance algal blooms. These parameters have directly and indirectly lead to annual fish kills for several years. The reservoir is a high priority for TMDL completion and will be submitted to U.S. EPA April 1, 2000. Designated beneficial uses are 1C, 2B, 3A, and 4, domestic use, secondary water contact, cold water fish, and agricultural uses, respectively.

Water quality endpoints were chosen which are linked to reduction of total phosphorous from the surrounding watershed. They include: 1) A shift in phytoplankton dominance from blue-green algae to a more diverse phytoplankton community, 2) DO level of no less than 4.0 mg/L in 50% of the water column at the deep end of the reservoir during critical periods (late winter and late summer), 3) TSI values in the range of 40-50. These endpoints are linked either indirectly or directly to achieving Scofield Reservoir's designated beneficial uses.

An acceptable load to Scofield Reservoir was estimated by Denton et al. (1983) as 1881 kg/year. The nutrient load allocation was linked to stream restoration strategies on Mud Creek and Fish Creek drainages which contribute 87% of the total annual phosphorous load to Scofield Reservoir. Denton et al. (1983) estimated that this load reduction would allow achievement of water quality standards and designated beneficial uses of Scofield Reservoir.

Technical analysis for this TMDL consists of regression equations used to calculate Carlson's Trophic State Index (TSI), intensive water quality monitoring conducted in 1997-1998 and the Clean Lakes Phase I and II studies conducted in 1982-1983 and 1990, respectively. A model specific to Scofield Reservoir is being developed to better estimate acceptable nutrient allocations and effects on the TSI. The model may also be used to validate endpoints and recommendation of future pollution control strategies.

The Margin of Safety (MOS) consists of conservative estimates of the endpoints to assure attainment of water quality standards and load allocations associated with pollution control techniques or Best Management Practices (BMP's). Future efforts will be directed to modeling load allocations and monitoring of Scofield Reservoir in a process of evaluation and refinement of TMDL endpoints.

The acceptable total phosphorous load (1,881 kg/year) to Scofield Reservoir will be allocated to stream restoration of Mud Creek and Fish Creek drainages. Some BMP's include: streambank revetments, installation of gabion check dams, re-seeding and planting of willows in devastated riparian areas, fencing and controlled livestock management techniques.

Public participation for this TMDL consists of the Price-San Rafael Steering committee and associated technical advisory committees. These committees were recently organized and

officially formed to deal with water quality issues in Scofield Reservoir and the Price and San Rafael River basins. The Steering Committee and TAC's consist of Emery and Carbon County Commissioners, SCD board members, BLM, Forest Service, DWQ, DWR, and State Parks and Recreation representatives. These committees have been designated to develop watershed and implementation plans, including funding mechanisms to address water quality issues in Scofield Reservoir and surrounding watersheds. During the Phase I Study a locally administered Steering Committee was in-place to guide and approve the recommendation of the Phase I Clean Lakes Study.

Waterbody description

Scofield Reservoir is a 2,815 acre body of water located in western Carbon County, which is in central Utah (Figure 1). Uses of Scofield Reservoir and its watershed include coal mining, agriculture, residential, fishing, hunting, snowmobiling, camping, and a variety of other types of summer and winter recreation. Scofield Reservoir is fed by several perennial streams (Figure 1), Fish Creek and Mud Creek account for 34,487 and 8,441 acre feet of water, respectively. These two streams account for 87 % of the inflow to Scofield Reservoir (Denton et al. 1983). The reservoir is one of the prime cold water fisheries in the state, both summer and winter because of its close proximity to Salt Lake City. Therefore, Scofield Reservoir is heavily impacted by anglers and other recreational users.

Scofield Reservoir is listed as impaired for a 3A, cold water fishery and the parameters of concern are total phosphorous concentrations and low dissolved oxygen (DO) concentrations, this condition also leads to algal blooms which may be related to seasonal fish kills. Scofield Reservoir is targeted for TMDL development and is considered a high priority in Utah's 1998 303(d) list. A Phase I Clean Lakes study was completed for Scofield Reservoir in 1982. In this report (Denton et al., 1983), it was determined that Fish Creek and Mud Creek accounted for the majority of the nutrient input to Scofield Reservoir, 52% and 29%, respectively. The Utah DEQ/DWQ is considering this TMDL for one pollutant (total phosphorous) because low DO is scientifically linked to high total phosphorous levels. Any reductions in phosphorous loadings will likely improve the DO content in the reservoir. The Utah Division of Wildlife Resources (DWR) has documented fish kills for the last three years (Louis Berg, per. comm.) which has corresponded to blue-green algae blooms which are a result of excess nutrients such as phosphorous. The intent of this TMDL is to reduce the inflow of nutrients in an effort to restore beneficial uses of this water. The result of this action would also improve the recreational aspects (fishing) of Scofield Reservoir.

This TMDL is based on information reported from a Phase I Clean Lakes Report completed in 1983 and as such is a conservative estimate of nutrient loadings to the reservoir. As the implementation of controls or BMP's occur, as outlined in this TMDL, validation or refinement of TMDL endpoints may occur. In addition, modeling of the reservoir and input of new data may also require modification of endpoints or controls to achieve water quality standards.

Water Quality Standards

Beneficial use designation for the waters of Scofield Reservoir are presented in Table 1.

Table 1. Utah Division of Water Quality beneficial use designation for Scofield Reservoir.

Class	Beneficial Use Designation
1C	protected for domestic purposes with prior treatment as required by Utah Department of Environmental Quality
2B	protected for secondary water contact; class
3A	protected for cold water species of game fish, including the necessary aquatic organisms in their food chain
4	protected for agricultural uses such as irrigation and stock watering

The reservoir is listed in the 1998 303(d) for excess total phosphorous and low DO. Although Scofield Reservoir was assessed as fully supporting (1998 305 report) based on numeric water quality criteria (pH, DO, and temperature) during the productivity season (May-Sept.), narrative water quality standards such as depleted winter DO levels, presence of nuisance algae, and documented fish kills show the reservoir as partially supporting its beneficial uses.

Water quality studies conducted in 1990 (Judd, 1992) show blue-green algae comprised 99% of all taxa present, indicating poor water quality conditions. Eutrophication trends for Scofield Reservoir were assessed using Carlson's (1977) Trophic State Index (TSI) and show an increasing trend through 1991, reaching 66.34 indicating a highly eutrophic condition. In 1991 rough fish were removed from Scofield Reservoir and the TSI in subsequent years has shown a downward trend, reaching 41.69 in 1995-96, which indicates a mesotrophic condition. More recent (1998-99) data indicate a slight increase in the TSI. It is hypothesized that the removal of rough fish in 1992 was beneficial in that bottom sediments were disturbed less, resulting in decreased release of nutrients into the water column. Throughout this time (from 1991 on) significant blue-green algae blooms were observed and fish kills were documented. The data used to derive TSI values is limited (not collected at the same period of time) and therefore has a relatively high degree of variability which may not reflect actual eutrophication trends for Scofield Reservoir. Recently formed local stakeholder committees have agreed to commit time and resources for a more coordinated water quality sampling. This will lead to a more detailed investigation of the relationship between blue-green blooms and TSI values.

The Scofield Reservoir Phase I and II Clean Lakes Studies (Denton, et al. 1983 and Judd, 1992), have shown blue-green algae blooms are a result of increased nutrients, which are often limited by aqueous phosphorous levels. Therefore, the pollutant of concern for this TMDL document is total phosphorous, because reductions of phosphorous (as a result of implemented TMDL) will limit the blue-green algae and directly alleviate low winter DO conditions and reduce fish kills.

Water Quality Targets/Endpoints

Improvement of water quality in Scofield Reservoir is linked to a reduction of nutrients from the surrounding watershed. We propose to use three endpoints, they include:

1. A shift in phytoplankton dominance from blue-green algae to a more diverse phytoplankton community.

2. DO level of no less than 4.0 mg/L in 50% of the water column at the deep end of the reservoir during critical periods (late winter and late summer).
3. TSI values in the range of 40-50.

A major factor in restoring Scofield Reservoir's beneficial use (cold water fishery) is reducing the blue-green algae blooms and either directly or indirectly improving the DO levels throughout the year. At this time we feel the best endpoint would be to measure the dominance of blue-green algae when they appear to be the most problematic, which is during the productivity period, May through September. Qualitative samples would be taken throughout this period to determine dominance of blue-green algae. The shift from dominant blue-green algae to increased diatoms and green algae would be an indicator of reduced total phosphorous levels in Scofield Reservoir.

The second endpoint that will be linked to nutrient reduction in Scofield Reservoir is DO concentrations no less than 4.0 mg/L in 50 % of the water column during the critical periods (late summer and late winter). This endpoint is directly linked to the protection and survival of cold water fish species (Louis Berg, per. comm.) and therefore to attainment of one of Scofield Reservoir's designated beneficial uses (Table 1). Utah's Division of Wildlife Resources (DWR) has shown that a DO concentration of less than 5.0 mg/L has lead to mortality of cold water fish in lakes and reservoirs. A DO concentration profile will be measured at one meter intervals at the deep site in Scofield Reservoir to determine this endpoint.

The third endpoint, a TSI in the range of 40-50 is directly linked to nutrient levels in Scofield Reservoir. This endpoint takes into account chlorophyll-a, secchi depth, and total phosphorous concentrations which are a direct measure of the nutrient levels in Scofield Reservoir. These water quality parameters (chlorophyll-a, secchi depth, and total phosphorous concentrations) can be measured when the blue-green algae samples are taken. This sampling coordination will increase the validity of the TSI values on an annual basis.

Water quality samples for chlorophyll-a, total phosphorous, and secchi depth will be taken semi-annually (May and Sept) at STORET sites 593098, 593099, and 593100 (Figure 2). The type of sampling will consist of grab samples. Phytoplankton samples and DO concentrations will be taken only at the deep site (STORET 593100). During implementation of BMP's a more rigorous sampling protocol will be developed to track progress towards water quality goals.

TMDL

Based on data in the Phase I Clean Lakes report (Denton et al., 1983), the total phosphorous acceptable load allocation for Scofield Reservoir is 4,842 kg/year. This is based on all inputs to the reservoir (Figure 1; Table 2). The load reduction is 1881 kg/year which is a 28% reduction of nutrients from non-point sources to Scofield Reservoir. The reduction of total phosphorous was linked to implementation of several stream restoration strategies (Table 3). Denton et al. (1983) projected that designated beneficial use and water quality criteria would be achieved by this plan of action.

In support of this phosphorous reduction plan, several other concepts were developed outside of the scope of this plan that would also control nutrient reduction in Scofield Reservoir. They included the following:

1. Developing and implementing livestock grazing management plans.
2. Planning of recreational development, providing an improved sewer disposal system.

3. Controlling of surface disturbance activities and solid waste disposal.

Although Fish Creek contributed 53% of the phosphorous loading to the reservoir, it was not selected as the primary area for streambank restoration due to lack of local cooperation, extremely steep, and unstable streambanks. However, the following restoration techniques were applied and total phosphorous was linked primarily to suspended solids.

1. Approximately 3,300 feet of fencing was installed to protect area from further deterioration from livestock and vehicular travel.
2. Some eroded area within the above enclosure were filled, sloped, and re-seeded for stabilization.

Based on the Clean Lakes Study I (1983) the implementation of proposed Mud Creek Project would reduce total phosphorous loading to Scofield Reservoir by 500kg/year. The project consisted of installation of gabion check dams, bank stabilization using Juniper revetments, re-vegetation and establishment of riparian habitat, and enclosure of project by fencing.

The Phase II Clean Lakes Study (1990) concluded that insufficient data exists to confirm the effectiveness of these stream restoration activities in reducing phosphorous loads to Scofield Reservoir. The data, although limited, does show a slight reduction in total phosphorous levels after stream restoration had taken place. One possible reason may have been that fencing of a significant portion of Mud Creek was not completed and no livestock grazing management was instituted due to landowner conflicts.

Currently a model that will be used to determine more scientifically acceptable load allocations based on long term water quality data, reservoir morphology and morphometry is being developed. The Clean Lakes Phase II report also concluded that internal phosphorous loading may also be occurring in the winter. The model under development will include attempts to show internal phosphorous loading and its effects on eutrophication of Scofield Reservoir. This model either validate or modify current projections of nutrient loading allocations and thereby implement control actions which will attain designated beneficial uses for Scofield Reservoir. The model coupled with an ongoing monitoring plan will act as the margin of safety required under the TMDL guidelines. As information is acquired the TMDL may be modified according to the information obtained.

Table 2. Stream and reservoir restoration techniques and nutrient load allocations for Scofield Reservoir (Clean Lakes Phase I, Denton et al. 1983 report).

Restoration Technique or Alternative	Estimated Phosphorous removal (kg/yr)	Public Benefits	Water quality Benefits	Public Acceptance	Feasibility
Stream restoration on private lands (Mud Creek)	500	Good	Great	Good	Feasible
Improved recreation facilities	200	Moderate	Little	Good	Feasible
Law enforcement	50	Good	Little	Good	Feasible
South shore wetland project	481	Good	Moderate	Good	Feasible
Enforcement fish entrails disposal	50	Good	Moderate	Good	Feasible
Fish Creek restoration	500	Good	Excellent	Good	Less Feasible
Fish cleaning station	100	Good	Moderate	Good	Feasible
Total estimated phosphorous reduction	1881				

Significant sources

The Utah Division of Water Quality completed a study of Scofield Reservoir and its watershed through an EPA Clean Lakes Phase I study in 1983. The study identified the sources of pollution and determined that phosphorus and nitrogen were both limiting nutrients. However, recommended remedial action for lake restoration was directed towards a reduction of phosphorus within the watershed.

Denton and others (1983) determined external phosphorus contributions to the reservoir as shown in Table 3. Fish Creek contributes 52% (3508 kg/year) and Mud Creek contributes 24% (1613 kg/year) of all external phosphorus loads. The remaining tributaries, shoreline wash, and precipitation contribute 24% of the external phosphorus load. Slightly higher loading values with similar distributions were reported by Waddell and others (1983) for the 1979-80 water year.

The external sources of phosphorus include stream sediments, sewage, and agricultural wastes. In an effort to reduce human waste a centralized leech field system was put in place for the town of Scofield in 1983. However, erosion and agricultural practices continue to be a problem. Sediment release by erosion in the watershed contributes to a large fraction of the phosphorus load into the reservoir. Intensive livestock grazing in the watershed, grazing within the riparian zones (stream banks), in particular in close proximity to the reservoir, road construction, summer home construction, and mining activities have all accelerated the erosion process.

Table 3. Annual Phosphorus contributions from sub-basin areas

Sub-basin	Annual Total Phosphorus Load (kg/year)
Fish Creek (FCI)	3508
Mud Creek (PVC-1)*	158
Mud Creek (PVC-2)*	528
Mud Creek (PVC-3)*	249
Mud Creek (PVC-4)*	323
Mud Creek (PVC-5)*	115
Mud Creek (PVC-6)*	240
Pondtown Creek (PC-1)	488
Woods Canyon Creek (WC-2)	172
Miller Canyon Creek (MC-1)	66
Dry Valley Creek (DVC-1)	89
Eccles Creek (EC-1)	337
Shoreline Wash (SW-1)	308
Precipitation	142
TOTAL	6723

* The drainage was subdivided and annual loadings determined for each sub-basin. Total load for Mud Creek minus Eccles Creek was 1613 kg/year.

The Manti LaSal National Forest has completed a water resource inventory for the Price River watershed. Data were compiled on 72,359 acres in and around the National Forest. Sediment yields were estimated and watershed improvement needs were identified. The work on these ongoing improvements need to be accelerated. Of the land surveyed 7257 acres or 10.1 percent of the watershed was classified with high to extreme erosion potential. Water quality in the streams based on suspended sediments was estimated to range from 52 mg/L in the Fairview Lakes to 276 mg/L in Mud Creek. Anything above 100 mg/L is considered high or very poor water quality. Erosion is the major source of pollution into Scofield Reservoir. Sediment and sediment related nutrients are primary reasons for the deteriorating water quality in the reservoir.

In addition to phosphorus loads from external sources the resuspension of phosphorus from lake sediments back into the water column is occurring. Internal loading of phosphorus involves chemical interactions within the reservoir. Since the reservoir was constructed in 1946, sediments

have been deposited on the reservoir bottom. These sediments contain phosphorus that is stored in different chemical forms. The phosphorus is bound to other elements (iron and calcium) forming phosphate salts. However, when the lake stratifies water from the hypolimnion (bottom) does not mix with the surface water and dissolved oxygen in the hypolimnetic water column is used to oxidize organic materials. Eventually the hypolimnion becomes anoxic. Under these conditions phosphate salts break down and the phosphorus is released into the water column. At turnover, when the water in the reservoir mixes in the spring and fall, this rich source of phosphorus becomes available for algal production. Dissolved oxygen studies indicate that internal phosphorus loading may be higher than was previously expected (Judd, 1992).

Technical Analysis

The technical analysis for this TMDL consists of regression equations (1-3) used to derive TSI values, intensive water quality monitoring conducted in 1997-1998, and Clean Lakes Phase I and II studies conducted in 1982-1983 and 1990, respectively. Nutrient load allocations for this TMDL were estimated based on the Clean lakes Phase I and II reports (Denton et al., 1983). A water quality model specific to Scofield Reservoir is being developed to better estimate nutrient allocations and effects on the TSI. At this time the model is not complete, but will be used in validation of endpoints and recommendation of phosphorous control strategies if needed for Scofield Reservoir. The model will be completed by May 2000 and will be used to better define load allocations for Fish Creek and Mud Creek.

1. $TSI = 60 - 14.41 \ln \text{Secchi Depth}$
2. $TSI = 9.81 \ln \text{Chl A} + 30.6$
3. $TSI = 14.42 \ln \text{Total Phosphorous} + 4.15$

Margin of Safety and Seasonality

The margin of safety (MOS) for this TMDL is built into the load allocations in the Phase I and II Clean Lakes Report. The pollution control techniques or BMP's were a conservative approach to attainment of designated beneficial uses for Scofield Reservoir. Selection of endpoints has a MOS built into them, for example, the reduction of blue-green algae will be attained by a simple shift in dominance, the DO concentration of 4.0 mg/L in 50% of the water column allows for a sufficient niche for fish during winter as the hypolimnion (O_2 deficient) increases, and the TSI has a wide range (40-50) which equates to mesotrophic conditions.

Using the concept of adaptive management, as BMP's are implemented annual water quality monitoring and analysis of TMDL endpoints will provide information that will allow mid-course management changes to be made that assure water quality goals are met.

The choice of endpoints also takes into account seasonality of the TMDL. Blue-green algae blooms due to increased nutrients predominantly occur in late summer and fall. The DO concentration profile will be measured in summer and fall. The TSI will also be calculated on data taken throughout the productivity season (summer and fall).

Allocation of Load Reductions or Management Strategies

The specific recommendation of the Phase I study included the following stream restoration elements:

1. Implementation of stream restoration and streambank stabilization for Mud Creek and Fish Creek.
2. Construction of a public fish cleaning station.
3. Development of a public education and awareness campaign.
4. Chemical treatment for internal nutrient loading (contingent on future modeling results).

The majority (79%) of total phosphorous load reductions (Table 2) to Scofield Reservoir will be allocated by continuing with stream restoration projects on Mud Creek and Fish Creek. Based on the report by Denton et al., 1983, the implementation of stream restoration will result in a total phosphorous load reduction to Scofield Reservoir of 1881 kg/year and represents a 28% reduction of non-point source pollution. Due to extremely steep banks in the Fish Creek drainage stream restoration efforts will be directed to Mud Creek drainage (see TMDL section). The other load allocations are specific to management of recreation facilities (managed by State Parks and Recreation) at Scofield Reservoir, such as enforcement of fish entrails disposal, fish cleaning stations, improved recreation facilities. The Phase II Clean Lakes report documented that attainment of load reductions has not occurred due to incomplete implementation of restoration practices. Loading estimates included in this TMDL still can be achieved through adequate implementation of BMP's in the Scofield Reservoir watershed.

The south shore wetland project would reduce total phosphorous to the reservoir significantly, approximately 481 kg/year (Table 2). This project consists of reducing nutrient inputs associated with livestock grazing by fencing off a portion of the south shore of the reservoir. Based on a livestock model developed by Natural Resources Conservation Service (NRCS) in Utah this load allocation (481 kg/year) is thought to be underestimated. The NRCS livestock model indicates a total phosphorous load allocation of 674 kg/year. At this time we do not know the livestock grazing allotment on the south shores of the reservoir, therefore, we are basing the load allocation on 100 head of livestock grazing on the south shore for 180 days per year. This equates to a 10% (193 kg/year) difference for the total load allocation. This difference will be part of the TMDL's MOS as well.

One element of the Scofield Reservoir water quality model is an internal nutrient loading factor. If this model suggests internal loading of nutrients is a significant factor, other nutrient load reduction plans will need to be developed, such as P-inactivation by chemical means. This will only be done when all other nutrient reduction efforts have been completed and subsequent data shows significant internal nutrient loading. The TMDL will be modified if this is the case.

Implementation of these projects has recently been taken up by organized local stakeholder committees to develop a watershed management plan. One priority of the Price River Technical workgroup will be to mediate landowner conflicts in the Scofield Reservoir watershed and secure 319 NPS funds and other funding to implement these nutrient load allocation projects.

Public Participation

Public participation for this TMDL consists of the Price-San Rafael Steering committee and associated technical advisory committees. These committees were recently organized and officially formed to deal with water quality issues in Scofield Reservoir and the Price and San Rafael River basins. The Steering Committee and TAC's consist of Emery and Carbon County Commissioners, SCD board members, BLM, Forest Service, DWQ, DWR, and State Parks and Recreation representatives. These committees have been designated to develop watershed and implementation plans, including funding mechanisms to address water quality issues in Scofield Reservoir and other impaired waters in surrounding watersheds. During the Phase I Study a locally administered Steering Committee was in-place to guide and approve the recommendation of the Phase I Clean Lakes Study.

The notice of this TMDL was published one time for a 30 day comment period in the Salt Lake Tribune and Deseret News. The TMDL was also available in its entirety on the State of Utah DEQ-DWQ web page (<http://www.eq.state.ut.us>) for thirty days. No public comments were received.

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EXHIBIT B

A kinetic approach to the effect of temperature on algal growth.
Goldman & Carpenter, Woods Hole Oceanographic Institution (1973)

Conserving, protecting, and restoring North America's coldwater fisheries

A kinetic approach to the effect of temperature on algal growth¹

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Abstract

A simple model incorporates the combined effects of temperature and nutrient limitation on the growth rate of algae. The temperature function is described by the Arrhenius equation and the nutrient relationship with the Monod model. The Arrhenius equation is inserted into the Monod model for the maximum growth rate μ , so that the growth rate is described by the product of temperature and nutrient expressions.

The utility of the Arrhenius equation in describing the effect of temperature on μ for phytoplankton is tested with data from the literature on continuous culture experiments with freshwater and marine algae; the Arrhenius model describes the relationship between μ and temperature extremely well. Several restrictions to widespread use of the model limit its application to laboratory studies, but its general concepts may apply to natural water situations.

The need for quantitative data on the effect of temperature on phytoplankton growth is evident if we are to assess both the role of temperature in natural waters (Eppley 1972) and the impact of thermal pollution (Patrick 1969).

Attempts to model nutrient effects on algal growth rates by using the Monod model have been reasonably successful (Dugdale 1967; Eppley et al. 1969; Paasche 1973; Goldman et al. 1974). A basic assumption governing the use of this model is that the growth rate of an alga is dependent solely on the concentration of a particular limiting nutrient. Thus, the Monod model is described as

$$\mu = f(s) = \mu \left[\frac{S}{K_s + S} \right] \quad (1)$$

in which μ = specific growth rate, day⁻¹ (base *e*); μ = maximum specific growth rate, day⁻¹ (base *e*); *S* = limiting nutrient concentration, mg liter⁻¹; and K_s = half saturation coefficient, mg liter⁻¹.

By necessity during nutrient uptake studies other variables that affect growth rates, such as light intensity and temperature, are either held constant, as in laboratory cultures, or are considered to have a constant effect, as during the course of a field ex-

periment. Although such simplified assumptions are necessary for the models to be used, their applicability is thereby restricted in describing the response of algae to the range of environmental conditions in natural waters. Also, use of the simplistic Monod model permits no consideration of the interdependency of environmental factors affecting the uptake of nutrients by phytoplankton. For example, Eppley and Sloan (1966) found that the effects of light and temperature on algal growth rates were interrelated; Eppley and Strickland (1968) and Middlebrooks and Porcella (1971) have discussed the importance of the interactions between light intensity, temperature, and nutrient concentration on algal growth rates. Yet there have been only a few attempts to model these interactions in a quantitative fashion (DiToro et al. 1971; MacIsaac and Dugdale 1972).

We have developed a relatively simple model in which the effect of temperature on algal growth rates is incorporated into a product expansion of the Monod model. With this new model the combined effects of temperature and nutrient limitation can be described. We thank J. H. Ryther and H. W. Jannasch for their critical review of this manuscript.

Concepts of the model

The maximum growth rate as defined by the Monod relationship, although not

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dependent on the limiting nutrient concentration, is still a function of other environmental variables such as light and temperature. When light intensity is held constant, it is possible to describe the maximum growth rate solely as a function of temperature by applying the Arrhenius equation. Then

$$\mu = Ae^{-E/RT} \quad (2)$$

in which A = constant, day^{-1} ; E = activation energy, cal mole^{-1} ; R = universal gas constant, $\text{cal } ^\circ\text{K}^{-1} \text{mole}^{-1}$; and T = temperature, Kelvin scale, $^\circ\text{K}$.

By substituting equation 2 into equation 1 we have

$$\mu = Ae^{-E/RT} \left[\frac{S}{K_s + S} \right] \quad (3)$$

The specific growth rate is now dependent on both temperature and limiting nutrient concentration.

The Arrhenius equation is used here to describe the temperature function only for lack of a more fitting relationship, and because intuitively it would appear that algal growth rates, involving many biochemical reactions, would follow the van't Hoff rule; that is, biological reactions should approximately double for each 10°C rise in temperature. Restrictions to its general use are quickly apparent. First, for each algal species the Arrhenius relationship is applicable only in a definite temperature range (Sorokin 1960). Second, there is evidence of a strong interaction between light intensity and temperature: for example, Sorokin (1960, 1971) has found that for a given temperature the activation energy decreases with increasing light energy; Shelef (1968) has shown that the saturation light intensity is highly temperature dependent. And third, the half saturation coefficient for nutrient uptake is very sensitive to changes in temperature (Shelef et al. 1970). Thus a more general relationship than described by equation 3 would be

$$\mu = Ae^{-E(T)/RT} \left[\frac{S}{K_s(T) + S} \right] \quad (4)$$

in which $K_s(T)$ = temperature dependent half saturation coefficient, mg liter^{-1} ; and $E(T)$ = light dependent activation energy, cal mole^{-1} .

A further complication in the effect of temperature on algal growth is the possible temperature dependency of at least two other important parameters controlling nutrient uptake and net algal growth: the yield coefficient (Y) and the decay coefficient (k_d). Only minor variations in Y , defined as the biomass produced per mass of limiting nutrient assimilated, were found for nitrate limited continuous cultures of a high and low temperature strain of *Chlorella* (Shelef et al. 1970). These results were duplicated by Topiwala and Sinclair (1971) in a continuous culture study of the bacterium *Aerobacter aerogenes*. Thus Y may be relatively insensitive to temperature changes, although the exact effect of temperature on this growth parameter is not yet known.

Little information is available for k_d , defined as the factor describing all biological processes leading to a decrease in algal biomass (i.e. respiration, release of extracellular organic compounds, death, etc.). Ryther and Guillard (1962) have shown that dark respiration is highly temperature dependent and varies considerably from one algal species to the other.

The perhaps impossible task of determining temperature dependent coefficients such as $K_s(T)$, $Y(T)$, and $k_d(T)$ in natural systems may restrict application of the model to well defined laboratory studies. It should be possible to determine the temperature dependency of these growth parameters in unialgal experiments. In continuous culture experiments with temperature held constant, Shelef (1968) and Goldman et al. (1974) described these coefficients for several limiting nutrients. Unfortunately, there have been no attempts to model temperature effects in continuous culture algal studies, although Topiwala and Sinclair (1971) were able to develop relationships for μ , K_s , and k_d as functions of temperature for *A. aerogenes*, and Shelef

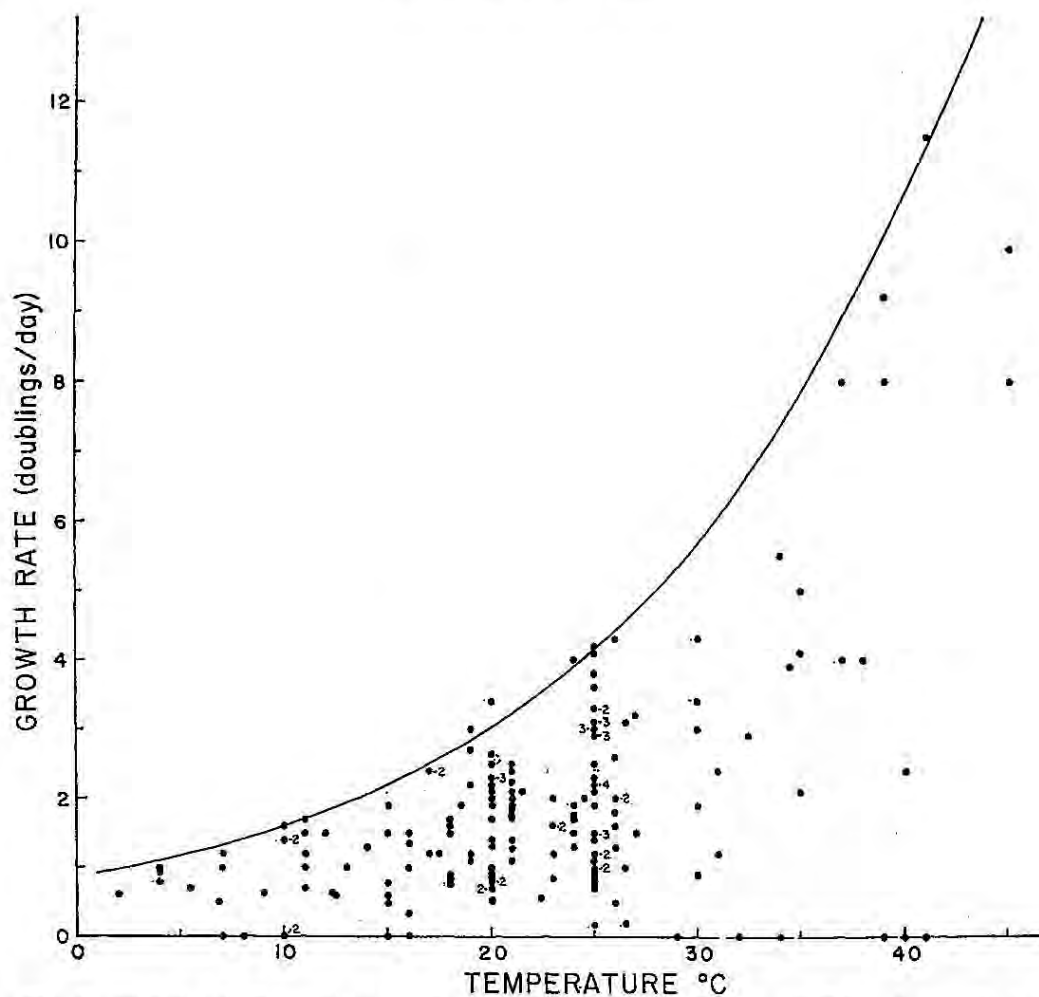


Fig. 1. Variation in the specific growth rate (μ) of photoautotrophic unicellular algae with temperature. Data are all for laboratory cultures. Growth rate is expressed in doublings per day (from Eppley 1972).

et al. (1970) showed that μ and K_s increased with increasing temperatures for *Chlorella*.

Temperature effects on maximum growth rate

One parameter in this model that can be analyzed with existing laboratory data is the relationship between μ and temperature. Eppley (1972), in his review of temperature effects on marine algae, plotted data compiled by Hoogenhout and Ames (1965) for growth rate versus temperature from a large number of batch culture stud-

ies of freshwater and marine algae. An enveloping curve appeared to describe μ in doublings/day as a function of temperature ($< 40^\circ\text{C}$) for the composite of all the algal species (Fig. 1). This curve is defined by the relationship

$$\mu_2 = 0.851(1.066)^t \quad (5)$$

in which μ_2 = specific growth rate (base 2), doublings day⁻¹, t = temperature, $^\circ\text{C}$, and represents a Q_{10} of 1.88.

Following Eppley's approach, we compared data for μ and temperature from

Temperature and algal growth

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Table 1. Maximum growth rate versus temperature data from continuous culture experiments on freshwater and marine algae.

Algal Species	Temp (°C)	Maximum growth rate* μ_e - day ⁻¹	Presumed limiting nutrient	Reference
<u>Freshwater algae</u>				
<u>Chlorella pyrenoidosa</u> (Emerson strain)	19	1.36	NH ₄ ⁺	Shelef et al. (1970)
	19	1.45	NO ₃ ⁻	Shelef (1968)
	25	1.95	PO ₄ ³⁻	Zabat (1970)
	25	2.14	PO ₄ ³⁻	Zabat (1970)
	28.5	1.84	NH ₄ ⁺	Shelef et al. (1970)
	28.5	2.22	NO ₃ ⁻	Shelef (1968)
<u>Chlorella pyrenoidosa</u> (TX 71105)	35	3.94	NH ₄ ⁺	Shelef et al. (1970)
	35	4.32	NO ₃ ⁻	Shelef (1968)
	39.2	4.26	NH ₄ ⁺	Shelef et al. (1970)
	39.2	5.65	NO ₃ ⁻	Shelef (1968)
<u>Chlorella</u> sp.	25	1.88	NO ₃	Williams (1965)
<u>Selenastrum capricornutum</u>	24	1.85	PO ₄ ³⁻	Toerien et al. (1971)
	27	2.45	C	Goldman et al. (1974)
<u>Scenedesmus quadricauda</u>	27	2.29	C	Goldman et al. (1974)
<u>Marine algae</u>				
<u>Skeletonema costatum</u>	19	1.27	V _{B12}	Droop (1970)
<u>Thalassiosira pseudonana</u> (13-1)	13.5	0.48	PO ₄ ³⁻	Fuhs (1969)
	18	1.14	PO ₄ ³⁻	Fuhs (1969)
	24	1.46	PO ₄ ³⁻	Fuhs (1969)
	25	2.09	NO ₃ ⁻	Caperon & Mayer (1972)
<u>Thalassiosira pseudonana</u> (3H)	20	2.77	Si	Faasche (1973)
	16	1.34	V _{B12}	Swift (1967)
<u>Nitzschia actinastroides</u>	23	2.06	PO ₄ ³⁻	Soeder et al. (1971)
<u>Monochrysis lutheri</u>	19	0.84	V _{B12}	Droop (1968)
<u>Dunaliella tertiolecta</u>	15	0.80	Fe	Davies (1970)
	25	1.83	NH ₄ ⁺	Caperon & Meyer (1972)
<u>Coccochloris</u> sp.	25	2.16	NO ₃ ⁻	Caperon & Meyer (1972)

* μ_e values are to the base e.

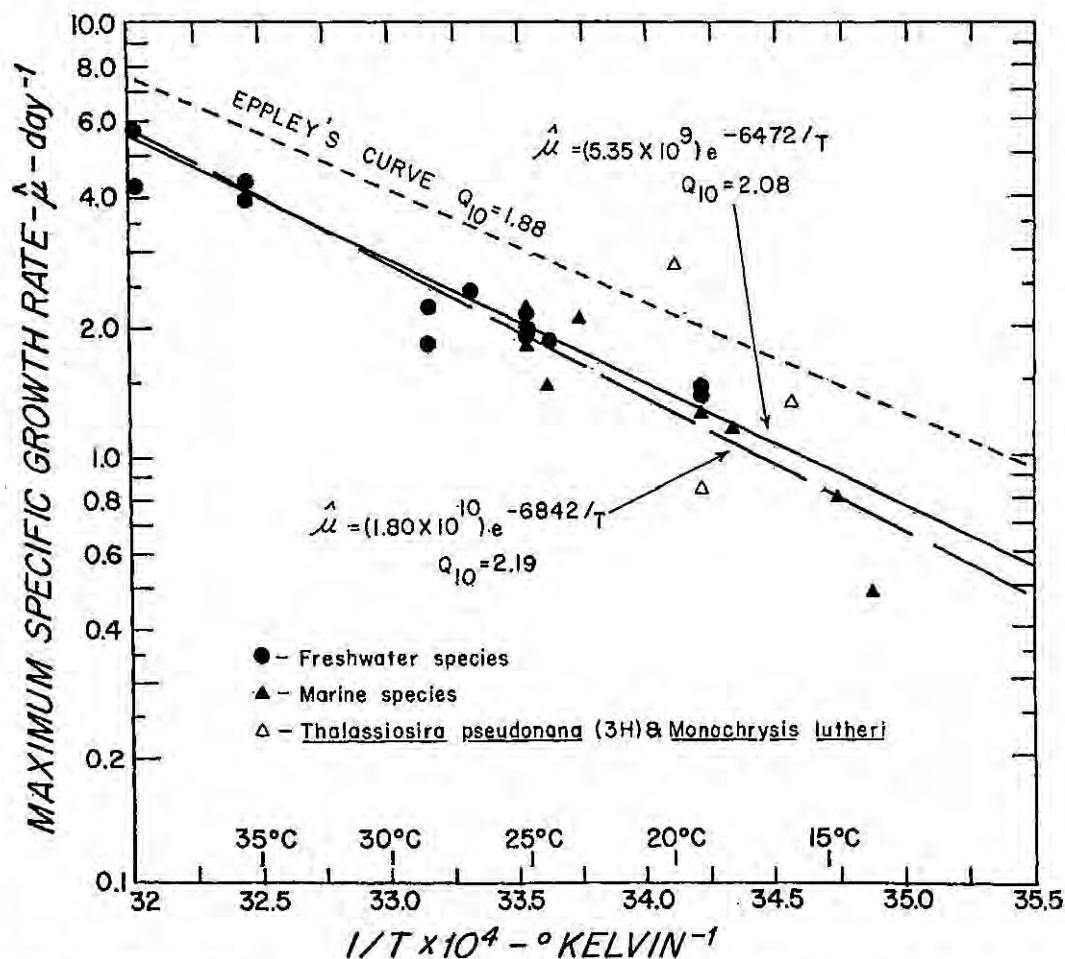


Fig. 2. Effects of temperature on the maximum specific growth rate of marine and freshwater algae grown in continuous culture.

previous continuous culture studies with marine and freshwater algae (Table 1); also included are the presumed limiting nutrients in the different studies. We then plotted $\log_e \hat{\mu}$ against $1/T$ (Fig. 2). The strong correlation between these parameters suggests that the growth rate of many freshwater and marine algae is controlled by some master reaction. Linear regression analysis of all of the data gave a correlation coefficient (r value) of 0.903 and the slope was significant at the 0.001 level. This curve is described by the equation

$$\hat{\mu} = (5.35 \times 10^9) e^{-6472/T} \quad (6)$$

This equation represents a Q_{10} of 2.08. It is remarkable that data from so many independent investigations should be in such agreement: if experimental conditions were the same for all the studies, the significance of fit in Fig. 2 might be even more striking.

It is interesting that Eppley's relationship (dashed line in Fig. 2), although having a slope, or Q_{10} , similar to ours, is displaced about one full $\hat{\mu}$ value above our median line. We do not know why $\hat{\mu}$ values from his analysis of batch culture data should be greater than those from continuous culture studies for essentially the same environ-

mental conditions. However, the important point is that it does appear possible to model the effect of temperature on algal growth rates mathematically; refinements of Eppley's model and ours will undoubtedly come when more growth rate and temperature data from batch and continuous culture studies for a variety of algal species become available. And more important, these relationships appear to be valid for many species of marine and freshwater algae. The implication of both sets of findings is that natural populations of phytoplankton may respond to temperature variations in a standard fashion; a model with good values for the coefficients may thus be useful in approximating the role of temperature in controlling phytoplankton production.

We are fully aware that the model leaves many questions unanswered and raises several new ones. As an example, equation 6 does not appear to hold for two of the species represented in Fig. 2, *Thalassiosira pseudonana* (= *Cyclotella nana*)-3H and *Monochrysis lutheri*. Both points for *T. pseudonana*-3H fall significantly above the curve and the one point for *M. lutheri* falls below. Unfortunately, no other continuous culture data are available for these species. *Thalassiosira pseudonana*-3H, on the evidence of the steep slope established by the two points, may have a much higher Q_{10} than that described by the curves in Fig. 2. Because all the species represented in Table 1 except *M. lutheri* are either green algae or diatoms, it may be that equation 6 is not valid for other taxa.

Excluding the data points for *T. pseudonana* 3H and *M. lutheri*, we obtain a linear regression line with an r value of 0.954 and again significance at the 0.001 level. This curve, shown by a broken line in Fig. 2, is described by the equation

$$\mu = (1.80 \times 10^{10})e^{-8842/T}, \quad (7)$$

Most of the algae represented in Figs. 1 and 2 are small single-celled species, undoubtedly because the small species are most easily grown in the laboratory. Possibly μ data for the larger species would

fall below the curves in Fig. 2, due to their seemingly lower growth rates under natural conditions, their presence in colder waters, and the dominance of smaller species in warmer waters (Ryther 1969; Eppley 1972); thus the larger species, both freshwater and marine, might have a composite temperature curve similar to that of the smaller species, but with lower values for the coefficients A or E (or both) in equation 2.

Application and limits of the model

It is apparent that an increase in water temperature, such as that resulting from the discharge of heated effluents, can lead to increased algal growth rates. As water temperatures increase more, growth of a particular species may be slowed or terminated and changes in species composition can occur.

Through application of equation 2 we can show graphically how temperature can play a role in determining species succession. In the four cases depicted in Fig. 3 the importance of coefficients A and E of equation 2 becomes clear. In the first case (Fig. 3A) the values of A and E for alga B are greater than for alga A. If all environmental conditions were optimum, then above temperature T_2 representing the intersection of the two curves, alga B, because of its higher μ value, would be the successful competitor; below T_2 alga A would dominate.

The second situation (Fig. 3B) shows how two species can have virtually the same coefficients but distinctly separate temperature ranges for optimum growth. The situations represented in Figs. 3C and 3D are variations of this general case. In Fig. 3C, although both algal species have the same temperature range for maximum growth and equal Q_{10} values, alga B, because it has a greater value for A , would have a higher growth rate at all temperatures in this range. In Fig. 3D, alga B has a more restricted temperature range for optimum growth than alga A. It can outcompete alga A only until its thermal limit is reached and its growth rate is adversely

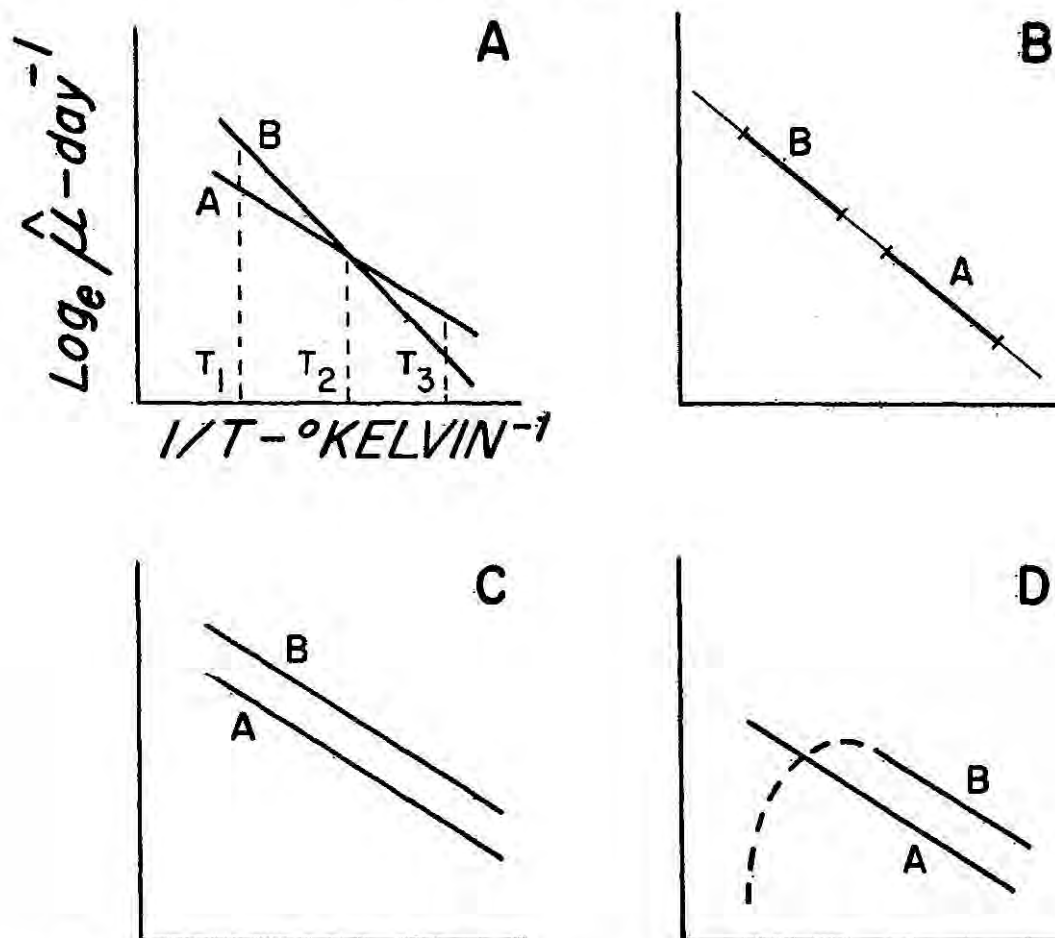


Fig. 3. Four situations in which the effect of temperature can affect competition between two algal species.

affected. Alga A would then be free to grow without competition from alga B.

Unfortunately, little information other than that described in Figs. 1 and 2 is available to compare temperature effects on different algal species. General temperature data from a number of studies, however, suggest that the situations depicted in Fig. 3 occur commonly in nature. For example, Eppley (1972) suggested that 40°C appears to be the upper limit at which his model is valid. This conclusion is consistent with the fact that the temperature of few natural waters exceeds this value, and the growth characteristics of algae most likely have evolved in adaptation to

local environmental conditions. An important example of acclimation to temperature is found in the thermophilic blue-green algae able to thrive at temperatures up to $73\text{--}74^\circ\text{C}$ in hot springs (Brock 1967). These thermophilic species do not appear as competitors in most natural waters because their lower temperature limits for growth are about $30\text{--}35^\circ\text{C}$ (Castenholz 1969), temperatures seldom exceeded even in waters affected by thermal pollution.

It is possible that in aquatic environments warmed either naturally or by power plant effluents and other heated wastes we would observe increases in algal growth rates and even changes in species

composition to more thermophilic types. It is difficult to predict the change in species composition solely from temperature-growth rate data obtained in unialgal laboratory experiments, because with a change in temperature all biological, chemical, and physical processes that, in turn, affect the life of an algal cell are changed (Drost-Hansen 1969). For examples, Smayda (1969) found that the marine diatom *Detonula confervacea* displayed a peak μ at 12°C in the laboratory, but yet it is most abundant in the Narragansett Bay estuary at 1°C, and Braarud (1961) showed that *Asterionella japonica* and *Thalassiosira nordenskiöldi* also had quite different temperature optima for growth in the laboratory than in the field. Carpenter (1973) noted that *Peridinium triquetrum*, which blooms in the Pamlico River estuary during spring when water temperatures are between 2° and 8°C, was significantly more abundant in heated pools of estuary water (10–27°C) than in control pools (5–19°C) of the same water; obviously, factors other than temperature are responsible for the disappearance of this dinoflagellate in nature after the spring bloom.

Pannell et al. (1962), Hockley (1963), and Morgan and Stross (1969) observed increased phytoplankton production in waters warmed by thermal power plant discharges, but gave little information relating temperature effects to species composition. Buck (cited in Merriman 1970) found the dominant diatom *Melosira ambigua* to be replaced by blue-green algae in the immediate vicinity of the discharge canal of the Connecticut Yankee nuclear power plant on the Connecticut River, consistent with Cairns' (1956) observations that the natural progression of freshwater algal species is from diatoms at 20–30°C to green algae at 30–35°C to blue-green algae above 35°C.

Clones of the same species isolated from different geographical regions have been shown to respond quite differently to temperature. Guillard et al. (1974) determined that the μ value of five clones of *Skeletonema costatum* increased from 0.17 day⁻¹ at

0°C to 1.52 day⁻¹ at 28°C and ceased at 31°C in batch cultures. In contrast, Hulburt and Guillard (1968) found that the closely related *Skeletonema tropicum* had a μ value of 2.07 day⁻¹ between 25°C and 35°C, with growth ceasing both below 13°C and above 35°C. Because this species is typical of warm water, it is not found along the coast of the United States north of the Cape Hatteras–Chesapeake Bay area where winter water temperatures fall below 10°C, and where *S. costatum* is found year round. They could not observe any growth at low temperatures for clones of a number of common marine diatoms isolated from off the coast of South America; clones of these same species isolated from off the coast of Cape Cod, Massachusetts, however, grew well down to 3–4°C. Guillard and Ryther (1962) found a similar growth rate pattern in *Thalassiosira pseudonana*: clone 13-1, isolated from the Sargasso Sea, grew well up to 25°C, but not at all below 15°C, whereas clone 3-H, isolated from the embayments of Long Island, New York, had a temperature range of 4–25°C for good growth. Thomas (1966) demonstrated that two isolates of *Gymnodinium* from tropical waters grew best in the temperature range 23–29°C, but would not grow below 15°C. Species of *Chaetoceros* and *Nannochloris* isolated from similar tropical waters would not grow below 10°C, but displayed good growth up to 37°C.

Multiplicative growth model

So far we have limited our discussion to a consideration of temperature effects on algal growth rates and species competition. Obviously, many factors including light, nutrients, predation, and sinking combine in multiplicative fashion to affect algal growth. Descriptive models encompassing these and other factors have met with limited success because data were insufficient to describe the individual coefficients (DiToro et al. 1971). However, even though good data are lacking, multiplicative models such as equation 3 may provide insight into the way in which the relative magni-

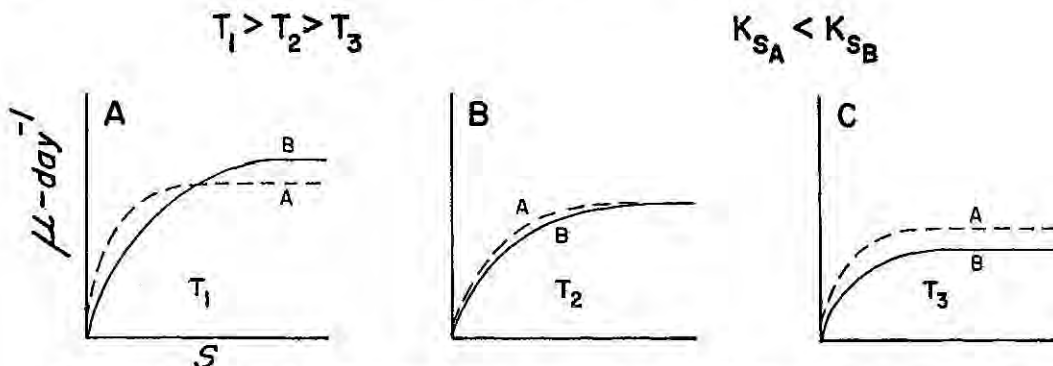


Fig. 4. The effects of the interaction between temperature and limiting nutrient concentration on competition between algal species. A— $\mu_B > \mu_A$. B— $\mu_B = \mu_A$. C— $\mu_B < \mu_A$. (For the effects of temperature on μ_A and μ_B see Fig. 3A.)

tude of each coefficient contributes to algal growth.

An illustration of this point is the case in which two algal species have different K_s values for a particular limiting nutrient and, as in Fig. 3A, also have different Q_{10} values. For simplicity, it is assumed that K_s is not affected by temperature. In Fig. 4 we examine three different growth situations depicted by the temperature regions (T_1, T_2, T_3) shown in Fig. 3A. In the temperature region T_1 , μ for alga B is greater than for alga A: thus K_s strongly influences the growth rates of both species at low nutrient levels, and alga A, because of its lower K_s value and higher growth rate, would dominate (Fig. 4A). As the limiting nutrient concentration increases, temperature exerts an increasing effect on the growth rate and alga B would become the more successful competitor. When the temperature increases, μ increases more rapidly for alga A than for alga B and the influence of temperature becomes more important over the entire range of nutrient concentration. At the intersection (T_2) of the two temperature curves in Fig. 3A both species have equal μ values: temperature is virtually eliminated as an influencing factor and alga B would be able to compete with alga A only at very high nutrient levels that correspond to μ (Fig. 4B). At even higher temperatures (T_3) the combined effect of K_s and temperature would

allow alga A to dominate over alga B at all nutrient concentrations (Fig. 4C).

Although we recognize the gross oversimplifications in the preceding examples—no consideration was given to the effect of temperature on other parameters as K_s , Y , k_d , predation, and sinking—they do serve to demonstrate the power of multiplicative models to describe the interactions between environmental factors both quantitatively and qualitatively. With the aid of the computer it may be possible to compare the relative effects of a multitude of numerical values for the different temperature dependent growth parameters on the net specific growth rate and to elucidate the relative importance of temperature and limiting nutrient concentration on the growth of phytoplankton in both natural and controlled situations.

As Middlebrooks and Porcella (1971) and Eppley (1972) have suggested, use of multivariate kinetics is a highly promising technique for modeling aquatic systems. This technique should find widespread applicability in laboratory studies, particularly with continuous cultures, for finding kinetic coefficients controlling the interactions between environmental factors and their resultant effect on growth rates. By developing a catalog of these coefficients for many algae and environmental conditions we should be able to make predictions concerning the conditions necessary

for certain species to win out in competition with others; simple competition experiments could then test the validity of the models.

There is a note of caution, however. A tendency exists among researchers to over-generalize and indiscriminately apply models such as our equation 7 to describe a broad range of aquatic systems. Models, as we all are aware, tend to take on omnipotent qualities with time, particularly if they are not challenged or modified as new data become available. We have tried to avoid this by suggesting that the coefficients of our model may be valid only for small single-celled diatoms and green algae since these were the only species for which we could find temperature-growth rate data in the literature. We have tried to reinforce this idea by presenting some hypothetical competition relationships, backed by considerable data from the literature, showing that simple models such as ours do not always tell the whole story. Obviously, the applicability and restrictions of our model await further experimentation.

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Submitted: 14 November 1973

Accepted: 6 June 1974

EXHIBIT C

Sanpete County Water Conservancy District
Financial Statements
(December 31, 2005)

Conserving, protecting, and restoring North America's coldwater fisheries

SANPETE COUNTY WATER CONSERVANCY DISTRICT
FINANCIAL STATEMENTS
DECEMBER 31, 2005

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Kimball & Roberts

Certified Public Accountants

A Professional Corporation

Box 663

Richfield, Utah 84701

Phone 896-6488

ACCOUNTANT'S REPORT

The Honorable Board Members
Sanpete County Water Conservancy District
Manti, Utah 84642

We have reviewed the accompanying financial statements of the governmental activities of Sanpete County Water Conservancy District as of and for the year ended December 31, 2005, which comprise the Districts basic financial statements as listed in the table of contents, in accordance with Statements on Standards for Accounting and Review Services issued by the American Institute of Certified Public Accountants. All information included in these financial statements is the representation of the management of Sanpete County Water Conservancy District.

A review consists principally of inquiries of District personnel and analytical procedures applied to financial data. It is substantially less in scope than an audit in accordance with generally accepted auditing standards, the objective of which is the expression of an opinion regarding the financial statements taken as a whole. Accordingly, we do not express such an opinion.

Based on our review, we are not aware of any material modifications that should be made to the accompanying financial statements in order for them to be in conformity with generally accepted accounting principles.

The management's discussion and analysis and budgetary comparison information on pages 4 through 7 and 23, are not a required part of the basic financial statements but are supplementary information required by the Governmental Accounting Standards Board. Such information has not been subjected to the inquiry and analytical procedures applied in the review of the basic financial statements, but was compiled from information that is the representation of management, without audit or review. Accordingly, we do not express an opinion or any other form of assurance on the supplementary information.


KIMBALL & ROBERTS, P. C.
Certified Public Accountants

July 3, 2006
Richfield, Utah

Sanpete County Water Conservancy District Management's Discussion and Analysis

This discussion and analysis of Sanpete County Water Conservancy District (District) financial performance provides an overview of the District's financial activities for the year ending December 31, 2005. This report is in conjunction with the District's financial statements, which are part of this report.

The purpose of Sanpete County Water Conservancy District is to develop water for Sanpete County.

Financial Highlights:

- The District has one depreciable asset, a water metering system. It has expended \$82,731 on the narrows dam project in 2005. This is in addition to previous years expenditures on this project of \$2,735,176.
- At the close of the current year, the District reported ending Net Assets of \$3,663,043 of which \$611,834 was restricted for capital projects.
- The District does not have any full-time employees and spent 58% on operating expenditures leaving 42% of the funds for capital additions on the narrows project in upper Gooseberry, east of Fairview, Utah.
- The District generates revenues through property tax assessments in Sanpete County. This year the District received \$267,327 in property taxes and \$50,879 in Fee-In-Lieu of taxes. It also earned \$13,087 in unrestricted investment earnings (Interest) on its idle funds.

Using This Annual Report

This discussion and analysis is intended to serve as an introduction to Sanpete County Water Conservancy District financial statements. The basic financial statements comprise three components:

1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains other supplementary information in addition to the basic financial statements themselves.

Government-wide financial statements

The government-wide financial statements are designed to provide readers with a broad overview of the District's finances, in a manner similar to a private-sector business.

The statement of net assets presents information on all of the District's assets and liabilities, with a difference between the two reported as net assets. Over time, increases and decreases in net assets may serve as a useful indicator of whether the financial position of the District is improving or deteriorating.

The statement of activities present information showing how the government's net assets changed during the most recent fiscal year. All changes in net assets are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future periods.

Governmental Funds:

Governmental funds are used to account for essentially the same functions reported as governmental activities in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on near-term inflows and outflows of spendable resources, as well as on balance of spendable resources available at the end of the year.

The district has two governmental funds, the general fund and a capital projects fund. The general fund at year end has unreserved fund balance of \$252,696. The Capital project fund has a fund balance of \$611,834, which is restricted for planned capital projects. The unreserved fund balance in the general fund is available for expenditures in future years budgets. Unreserved fund balance is 132% of total expenditures in the general fund.

Reporting the District as a Whole

The District realizes revenues from several sources; 1)property tax revenue
2)fee-in-lieu taxes and 3) unrestricted investment earnings.

Condensed Financial Statements:

A comparative analysis is provided for 2005 and 2004.

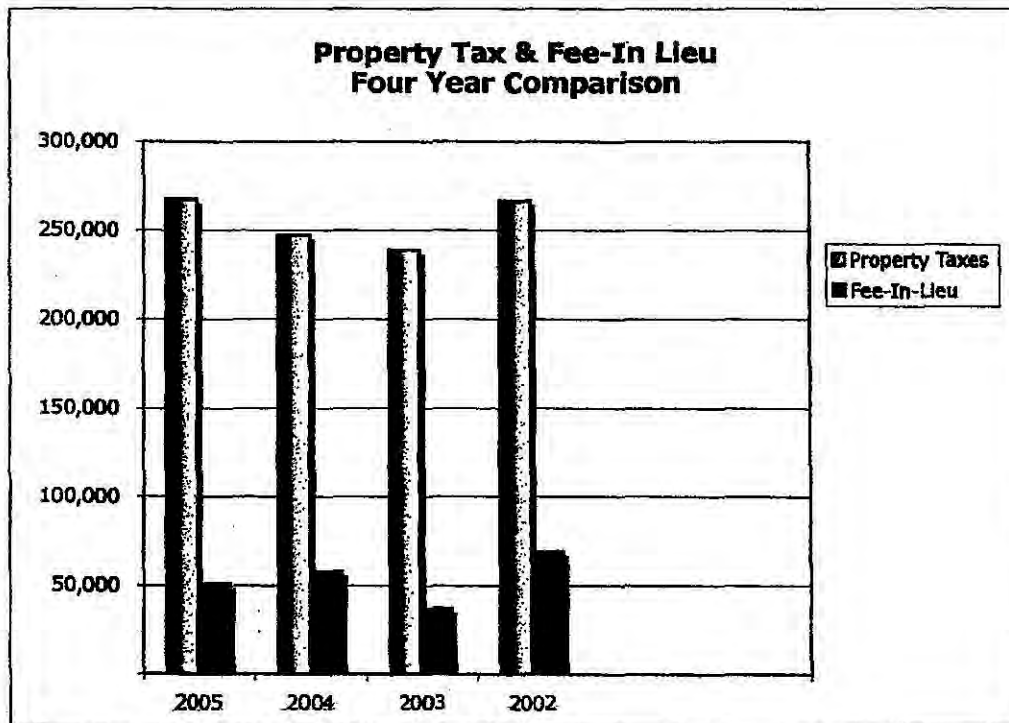
	2005	2004		2005	2004
Assets:			Revenues:		
Current	875,970	724,350	Property Taxes	267,327	247,532
Non-Current	2,848,079	2,767,123	Other Taxes	52,301	57,897
Total Assets	3,724,049	3,491,473	Investment Earnings	13,087	10,758
			Total Revenues	332,715	316,187
Liabilities:			Expenditures:		
Current	11,440	-	Current	111,579	130,018
Long-Term	49,566	49,566	Capital	82,731	43,985
Total Liabilities	61,006	49,566	Total Expenditures	194,310	174,003
Net Assets:					
Invested in					
Capital Assets	2,798,513	2,717,557			
Restricted	611,834	560,208	Change in Net Assets	221,136	186,170
Unrestricted	252,696	164,142	Beginning Net Assets	3,441,907	3,255,737
Net Assets	3,663,043	3,441,907	Ending Net Assets	3,663,043	3,441,907

Contacting the District

This financial report is designed to provide the citizens with a general overview of the District's finances and to show accountability for the money it receives. If you have questions about this report or need additional financial information, contact Secretary, David R. Cox, 90 West Union, Mantl, UT 84642.

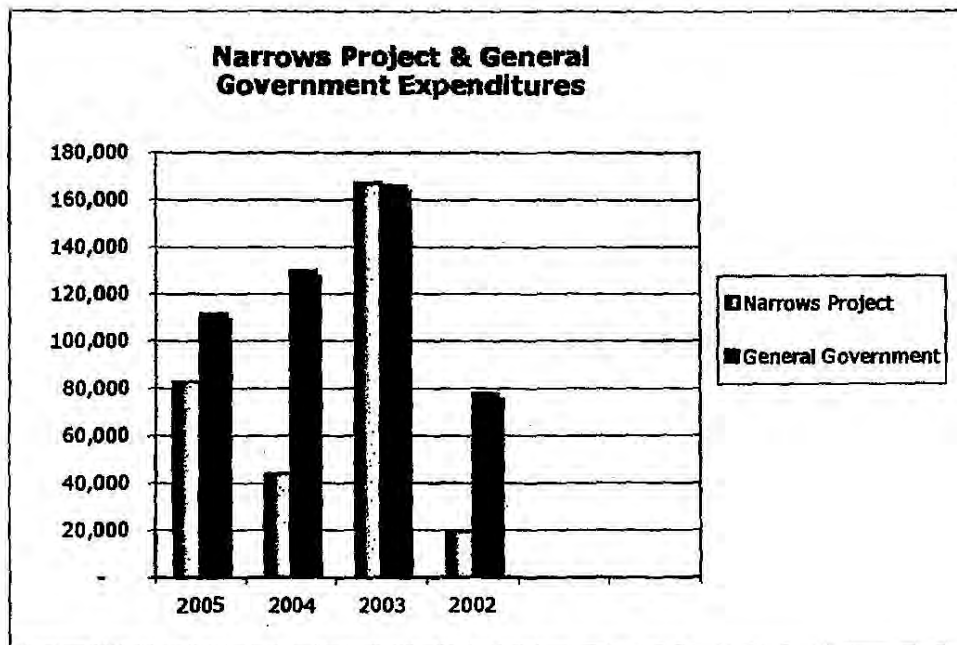
**Sanpete County Water Conservancy District
Revenue - Four Year Comparison**

	2005	2004	2003	2002
Property Taxes	267,327	247,532	238,950	266,631
Fee-In-Lieu	50,879	57,897	36,818	69,327
Sundry	1,422	-	9,548	3,735
Investment Earnings	13,087	10,758	6,524	11,217
Total	332,715	316,187	291,840	350,910



**Sanpete County Water Conservancy District
Expenditures - Four Year Comparison**

	2005	2004	2003	2002
Narrows Project	82,731	43,985	167,234	19,636
General Government	111,579	130,018	166,037	77,796
Total	194,310	174,003	333,271	97,432



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is used to assist in formatting, for easier reading)

BASIC FINANCIAL STATEMENTS

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF NET ASSETS**

December 31, 2005

	<u>Governmental Activities</u>
ASSETS	
Current Assets:	
Cash and Investments	817,534
Taxes Receivable	<u>58,436</u>
Total Current Assets	<u>875,970</u>
Noncurrent Assets:	
Capital Assets (Net of Accumulated Depreciation):	
Water Metering System	30,172
Construction-In-Progress	<u>2,817,907</u>
Total Noncurrent Assets	<u>2,848,079</u>
TOTAL ASSETS	<u>3,724,049</u>
LIABILITIES	
Current Liabilities:	
Accounts Payable	11,440
Noncurrent Liabilities:	
Note Payable - Due More Than One Year	<u>49,566</u>
TOTAL LIABILITIES	<u>61,006</u>
NET ASSETS	
Invested in Capital Assets, Net of Related Debt	2,798,513
Restricted for Capital Projects	611,834
Unrestricted	<u>252,696</u>
TOTAL NET ASSETS	<u>3,663,043</u>
TOTAL LIABILITIES AND NET ASSETS	<u>3,724,049</u>

See accompanying notes and accountant's report.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF ACTIVITIES**

For The Year Ended December 31, 2005

		<u>Program Revenues</u>		<u>Net (Expense)</u>
		<u>Charges for</u>	<u>Operating</u>	<u>Revenue and</u>
	<u>Expenses</u>	<u>Services</u>	<u>Grants/</u>	<u>Changes in</u>
			<u>Contributions</u>	<u>Net Assets</u>
Functions/Programs:				
Governmental Activities:				
Water Conservancy Operations	<u>111,579</u>	<u>-</u>	<u>-</u>	<u>(111,579)</u>
TOTAL REVENUES	<u>111,579</u>	<u>-</u>	<u>-</u>	<u>(111,579)</u>
General Revenues:				
Property Taxes				267,327
Other Taxes				50,879
Other Income				1,422
Unrestricted Investment Earnings				<u>13,087</u>
Total General Revenues				<u>332,715</u>
Changes in Net Assets				221,136
Net Assets - Beginning				<u>3,441,907</u>
Net Assets - Ending				<u><u>3,663,043</u></u>

See accompanying notes and accountant's report.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
BALANCE SHEET
GOVERNMENTAL FUNDS**

December 31, 2005

	General Fund	Capital Projects Fund	Total Governmental Funds
ASSETS			
Cash and Investments:			
Restricted		611,834	611,834
Unrestricted	205,700	-	205,700
Taxes Receivable	<u>58,436</u>	<u>-</u>	<u>58,436</u>
TOTAL ASSETS	<u><u>264,136</u></u>	<u><u>611,834</u></u>	<u><u>875,970</u></u>
LIABILITIES AND FUND EQUITY			
Liabilities:			
Accounts Payable	<u>11,440</u>	<u>-</u>	<u>11,440</u>
Fund Equity:			
Fund Balance:			
Restricted For Capital Projects	-	611,834	611,834
Undesignated	<u>252,696</u>	<u>-</u>	<u>252,696</u>
Total Fund Equity	<u>252,696</u>	<u>611,834</u>	<u>864,530</u>
TOTAL LIABILITIES AND FUND EQUITY	<u><u>264,136</u></u>	<u><u>611,834</u></u>	<u><u>875,970</u></u>

See accompanying notes and accountant's report.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
BALANCE SHEET RECONCILIATION TO STATEMENT OF NET ASSETS**

December 31, 2005

Total Fund Balances - Governmental Fund Types 864,530

Amounts reported for governmental activities in the statement of net assets
are different because:

Capital assets used in governmental activities are not financial resources
and, therefore, are not reported in the funds:

Water Metering System	30,172	
Construction-In-Progress	<u>2,817,907</u>	
Total (Net of Depreciation)		2,848,079

Long-term liabilities, including bonds payable, are not due and payable in
the current period and, therefore, are not reported in the funds:

Revenue Bonds Payable	<u>(49,566)</u>
Net Assets of Government Activities	<u><u>3,663,043</u></u>

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
GOVERNMENTAL FUNDS**

For The Year Ended December 31, 2005

	General Fund	Capital Projects Fund	Total Governmental Funds
Revenues:			
Property Taxes	238,508	-	238,508
Delinquent Property Taxes	28,818	-	28,818
Fee-In-Lieu	50,879	-	50,879
Other Income	1,422	-	1,422
Interest	13,087	-	13,087
Total Revenues	<u>332,714</u>	<u>-</u>	<u>332,714</u>
Expenditures:			
Current Expenditures:			
Engineering Fees	14,911	-	14,911
Engineering Fees - Narrows	59,997	-	59,997
Attorney Fees - Narrows	22,734	-	22,734
Attorney Fees	22	-	22
Cloud Seeding	14,570	-	14,570
Board of Directors Expense	2,750	-	2,750
Secretary Expenses	500	-	500
Insurance and Bonds	464	-	464
Supplies	109	-	109
Payroll taxes	249	-	249
Subscriptions	250	-	250
Advertising	390	-	390
Administrative Expenses	2,023	-	2,023
Public Relations	69,882	-	69,882
Mosquito Abatement	3,500	-	3,500
Other	183	-	183
Total Expenditures	<u>192,534</u>	<u>-</u>	<u>192,534</u>
Excess of Revenues Over (Under) Expenditures	<u>140,180</u>	<u>-</u>	<u>140,180</u>
Other Financing Sources (Uses):			
Transfers In (Out)	<u>(51,626)</u>	<u>51,626</u>	<u>-</u>
Net Change in Fund Balance	<u>88,554</u>	<u>51,626</u>	<u>140,180</u>
Fund Balance - Beginning	<u>164,142</u>	<u>560,208</u>	<u>724,350</u>
Fund Balance - Ending	<u>252,696</u>	<u>611,834</u>	<u>864,530</u>

See accompanying notes and accountant's report.

**- SANPETE COUNTY WATER CONSERVANCY DISTRICT
RECONCILIATION OF THE STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN
FUND BALANCES OF GOVERNMENTAL FUNDS TO THE STATEMENT OF ACTIVITIES**

For The Year Ended December 31, 2005

Amounts reported for governmental activities in the statement of activities
are different because:

Net Changes in Fund Balances - Total Governmental Funds	140,180
---	---------

Governmental funds report capital outlays as expenditures. However, in
the statement of activities the cost of those assets is allocated over their
estimated useful lives and reported as depreciation expense. This is the
amount by which capital outlays exceeded depreciation in the current period:

Capital Outlay	82,731	
Depreciation	<u>(1,775)</u>	
Total		<u>80,956</u>
Changes in Net Assets of Governmental Activities		<u><u>221,136</u></u>

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS**

December 31, 2005

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Sanpete County Water Conservancy District was organized in 1961 for the purpose of developing water for the County.

A. Reporting Entity

For financial reporting purposes, Sanpete County Water Conservancy District has included all funds. The District has also considered all potential component units for which it is financial accountable and that exclusion would cause the District's financial statements to be misleading or incomplete. The Governmental Accounting Standards Board has set forth criteria to be considered in determining financial accountability. These criteria include appointing a voting majority of an organization's governing body and (1) the ability of the District to impose its will on that organization or (2) the potential for the organization to provide specific financial benefits to, or impose specific financial burdens on the District.

As required by generally accepted accounting principles, these financial statements present Sanpete County Water Conservancy District, the reporting entity.

B. Government-Wide and Fund Financial Statements

The Statement of Net Assets and the Statement of Activities display information about the District, the primary government, as a whole. Governmental activities, which normally are supported by taxes and intergovernmental revenues, are reported separately from business-type activities, which rely to a significant extent on fees and charges for support.

The statement of activities demonstrates the degree to which the direct expenses of a given function or segment are offset by program revenues. Direct expenses are those that are clearly identifiable with a specific function or segment. Program revenues include 1) charges to customers or applicants who purchase, use or directly benefit from goods, services or privileges provided by a given function or segment and 2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular function or segment. Taxes and other items not properly included among program revenues are reported instead as general revenues.

Separate financial statements are provided for governmental funds and fiduciary funds, even though the latter are excluded from the government-wide financial statements. Major individual governmental funds are reported as separate columns in the fund financial statements.

C. Measurement Focus, Basis of Accounting and Financial Statement Presentation

The government-wide financial statements are reported using the economic resources measurement focus and accrual. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Grants and similar items are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS (CONTINUED)**

December 31, 2005

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Governmental fund financial statements are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. For this purpose, the government considers revenues to be available if they are collected within 60 days of the end of the current fiscal period. Expenditures generally are recorded when a liability is incurred, as under accrual accounting. However, debt service expenditures, as well as expenditures related to compensated absences and claims and judgments, are recorded only when payment is due.

State revenue sources and interest associated with the current fiscal period are considered to be susceptible to accrual and so have been recognized as revenues of the current fiscal period. All other revenues items are considered to be measurable and available only when cash is received by the government.

The government reports the following major governmental funds:

The General Fund is the government's primary operating fund. It accounts for all financial resources of the general government.

The Capital Projects Fund accounts for the acquisition of fixed assets or construction of major capital projects.

D. Assets, Liabilities and Net Assets or Equity

Deposits and Investments:

The government's cash and cash equivalents are considered to be cash on hand, demand deposits and short-term investments with original maturities of three months or less from the date of acquisition.

State statutes authorize the government to invest in obligations of the U. S. Treasury, commercial paper, corporate bonds, repurchase agreements and the State Treasurer's Investment Pool.

Investments for the government are reported at fair value. The State Treasurer's Investment Pool operates in accordance with appropriate state laws and regulations. The reported value of the pool is the same as the fair value of the pool shares.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS (CONTINUED)**

December 31, 2005

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Capital Assets:

Capital assets, which include property, plant, equipment, and infrastructure assets (e.g., roads, bridges, sidewalks and similar items), are reported in the applicable governmental activities column in the government-wide financial statements. Capital assets are defined by the government as assets with an initial, individual cost of more than \$5,000 and an estimated useful life in excess of two years. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at estimated fair market value at date of donation.

The cost of normal maintenance and repairs that do not add to the value of the asset or materially extend assets lives are not capitalized.

Major outlays for capital assets and improvements are capitalized as projects are constructed.

Property, plant and equipment of the primary government is depreciated using the straight line method over the following estimated useful lives:

Water Metering System	25 Years
-----------------------	----------

Long-Term Obligations:

In the government-wide financial statements long-term debt and other long-term obligations are reported as liabilities in the applicable governmental activities statement of net assets.

In the fund financial statement, governmental fund types recognize bond premiums and discounts, as well as bond issuance costs, if any, during the current period. The face amount of debt issued is reported as other financing sources. Premiums received on debt issuances are reported as other financing sources while discounts on debt issuance are reported as other financing uses. Issuance costs, whether or not withheld from the actual debt proceeds received, are reported as debt service expenditures.

Fund Equity:

In the fund financial statements, governmental funds report reservations of fund balance for amounts that are not available for appropriation or are legally restricted by outside parties for use for a specific purpose. Designation of fund balance represent tentative management plans that are subject to change.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS (CONTINUED)**

December 31, 2005

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

E. Use of Estimates:

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

F. Property Taxes

Property taxes are assessed and collected for the District by Sanpete County and remitted to the District shortly after collection. Property taxes become a lien on January 1 and are levied on the first Monday in August. Taxes are due and payable on November 1, and are delinquent after November 30. All dates are in the year of levy.

NOTE 2 - BUDGETARY COMPLIANCE

Excess of Expenditures over Appropriations - The Fiscal Procedures Act requires expenditures be restricted to authorized budgets. The statement of revenues, expenditures and changes in fund balance, budget and actual, identifies the accounts which have overexpended budgeted amounts if any and, therefore, do not comply with appropriate fiscal procedures.

NOTE 3 - DEPOSITS AND INVESTMENTS

Deposits:

At year-end the carrying amount of the District's deposits was \$817,534 and the bank balances were \$871,900. Of this amount \$200,000 was covered by federal depository insurance. Utah State statutes do not require deposits to be collateralized, however, financial institutions must be approved by the State Money Management Council.

Cash and investments as of December 31, 2005, consist of the following:

	<u>Fair Value</u>
Demand Deposits	<u>817,534</u>

Cash and investments listed above are classified in the accompanying government-wide statement of net assets as follows:

Governmental Activities - Unrestricted	205,700
Governmental Activities - Restricted	<u>611,834</u>
Total Cash and Cash Equivalents	<u>817,534</u>

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS (CONTINUED)**

December 31, 2005

NOTE 3 - DEPOSITS AND INVESTMENTS (CONTINUED)

The Utah Money Management Act (UMMA) established specific requirements regarding deposits of public funds by public treasurers. UMMA requires that District funds be deposited with a qualified depository which includes any depository institution which has been certified by the Utah State Commissioner of Financial Institutions as having met the requirements specified in UMMA Section 51, Chapter 7. UMMA provides the formula for determining the amount of public funds which a qualified depository may hold in order to minimize risk of loss and also defines capital requirements which an institution must maintain to be eligible to accept public funds. UMMA lists the criteria for investments and specifies the assets which are eligible to be invested in, and for some investments, the amount of time to maturity.

UMMA enables the State Treasurer to operate the Public Treasurer's Investment Pool (PTIF). PTIF is managed by the Utah State Treasurer's investment staff and comes under the regulatory authority of the Utah Money Management Council. This council is comprised of a select group of financial professionals from units of local and state government and financial institutions doing business in the state. PTIF operations and portfolio composition is monitored at least semi-annually by Utah Money Management Council. PTIF is unrated by any nationally recognized statistical rating organizations. Deposits in PTIF are not insured or otherwise guaranteed by the State of Utah. Participants share proportionally in any realized gains or losses on investments which are recorded on an amortized cost basis. The balance available for withdrawal is based on the accounting records maintained by PTIF. The fair value of the investment pool is approximately equal to the value of the pool shares.

Custodial Credit Risk:

Deposits - Custodial credit risk for deposits is the risk that in the event of a bank failure, the local government's deposits may not be recovered. The local government's policy for managing custodial credit risk is to adhere to the Money Management Act. The Act requires all deposits of the local government to be in a qualified depository, defined as any financial institution whose deposits are insured by an agency of the federal government and which has been certified by the Commissioner of Financial Institutions as meeting the requirements of the Act and adhering to the rules of the Utah Money Management Council. As of December 31, 2005, \$671,900 of the local government's bank balances of \$871,900 were uninsured and uncollateralized.

Credit Risk:

Credit risk is the risk that the counterparty of an investment will not fulfill its obligations. The local government's policy for limiting the credit risk of investments is to comply with the Money Management Act.

The local government is authorized to invest in the Utah Public Treasurer's Investment Fund (PTIF), an external pooled investment fund managed by the Utah State Treasurer and subject to the Act and Council requirements. The PTIF is not registered with the SEC as an investment company, and deposits in the PTIF are not insured or otherwise guaranteed by the State of Utah. The PTIF operates and reports to participants on an amortized cost basis. The income, gains and losses, net of administration fees, of the PTIF are allocated based upon the participants' average daily balances. The PTIF pool has not been rated.

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS (CONTINUED)**

December 31, 2005

NOTE 3 - DEPOSITS AND INVESTMENTS (CONTINUED)

Concentration of Credit Risk:

Concentration of credit risk the risk of loss attributed to the magnitude of a government's investments in a single issuer. The District deposits in two institutions, Far West Bank and Moroni Feed Credit Union.

NOTE 4 - TAXES RECEIVABLES

Taxes receivable are funds held by Sanpete County due to Sanpete County Water Conservancy District at December 31, 2005.

NOTE 5 - CONSTRUCTION IN PROGRESS

Narrows:

Construction in Progress - Narrows represents legal, engineering, and construction costs associated with the anticipated building of a dam in Upper Gooseberry, east of Fairview, Utah.

NOTE 6 - CAPITAL ASSETS

Capital Assets activity for the year ended December 31, 2005, was as follows:

	<u>Beginning Balance</u>	<u>Additions</u>	<u>Deletions</u>	<u>Ending Balance</u>
Governmental Activities:				
Capital Assets Not Being Depreciated:				
Construction-In-Progress	<u>2,735,176</u>	<u>82,731</u>	<u>-</u>	<u>2,817,907</u>
Capital Assets Being Depreciated:				
Water Metering System	<u>44,372</u>	<u>-</u>	<u>-</u>	<u>44,372</u>
Less Accumulated Depreciation For:				
Water Metering System	<u>12,425</u>	<u>1,775</u>	<u>-</u>	<u>14,200</u>
Total Capital Assets Being Depr. (Net)	<u>31,947</u>	<u>(1,775)</u>	<u>-</u>	<u>30,172</u>
Governmental Activities Capital Assets (Net)	<u>2,767,123</u>	<u>80,956</u>	<u>-</u>	<u>2,848,079</u>

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
NOTES TO FINANCIAL STATEMENTS (CONTINUED)**

December 31, 2005

NOTE 6 - CAPITAL ASSETS (CONTINUED)

Depreciation was charged to functions of the Government as follows:

General Fund	<u>1,775.00</u>
--------------	-----------------

NOTE 7 - NOTE PAYABLE DIVISION OF WATER RESOURCES

On May 1, 1994, the State of Utah, Department of Natural Resources, Division of Water Resources, approved funding to provide financial assistance for completion of the final Environmental Impact Statement for the Narrows Project in Carbon and Sanpete Counties.

The State approved a \$75,000 loan to be repaid when the Narrows Dam is constructed. At this time there are no terms set for repayment, nor has an interest rate been set. On November 21, 1994, the District received an advance from the State in the amount of \$52,465, leaving an undisbursed approved amount of \$22,535. Additional funds of \$22,101 were advanced during 1995. The total amount of advanced funds at December 31, 1995 was \$74,566. During 1996 the District repaid \$25,000 leaving a balance due of \$49,566. These funds are advanced upon submission of approved expenditures for the Environmental Impact Statement. The advanced funds of \$49,566 are shown as a note payable at December 31, 2005.

The following is statement of changes in the note payable:

	Balance December 31, 2004	Additions	Deletions	Balance December 31, 2005
Note Payable - Division of Water Resources	<u>49,566</u>	<u>-</u>	<u>-</u>	<u>49,566</u>

**REQUIRED SUPPLEMENTARY
INFORMATION
"UNAUDITED"**

(This page contains no information and
is used to assist in formatting, for easier reading)

**SANPETE COUNTY WATER CONSERVANCY DISTRICT
BUDGETARY COMPARISON SCHEDULE
GENERAL FUND**

For The Year Ended December 31, 2005

	<u>Budgeted Amounts</u>		<u>Actual</u>	<u>Variance with</u>
	<u>Original</u>	<u>Final</u>	<u>Amounts</u>	<u>Final Budget</u>
				<u>Positive</u>
				<u>(Negative)</u>
Revenues:				
Property Taxes	170,569	170,569	238,508	67,939
Fee-In-Lieu	38,360	38,360	50,879	12,519
Delinquent Property Taxes	21,961	21,961	28,818	6,857
Other Income	-	-	1,422	1,422
Interest	13,087	13,087	13,087	-
Total Revenues	243,977	243,977	332,714	88,737
Expenditures:				
Current:				
Attorney Fees	22,756	22,756	22,756	-
Engineering Fees	74,908	74,908	74,908	-
Board of Directors Expenses	2,750	2,750	2,750	-
Secretary Expenses	500	500	500	-
Insurance and Bonds	464	464	464	-
Supplies	109	109	109	-
Cloud Seeding	14,570	14,570	14,570	-
Construction and Labor	51,625	51,625	-	51,625
Payroll Taxes	249	249	249	-
Subscriptions	250	250	250	-
Advertising	391	391	391	-
Public Relations	69,882	69,882	69,882	-
Administrative Expenses	2,023	2,023	2,023	-
Mosquito Abatement	3,500	3,500	3,500	-
Other	-	-	183	(183)
Total Expenditures	243,977	243,977	192,535	51,442
Excess Revenues Over (Under)				
Expenditures	-	-	140,179	140,179
Other Financing Sources (Uses)				
Transfers In (Out)			(51,625)	
Net Changes In Fund Balance			88,554	
Fund Balance - Beginning of Year			164,142	
Fund Balance - End of Year			252,696	

66. TROUT UNLIMITED STONEFLY SOCIETY,
FREDERICK W. REIMHERR

ORIGINAL

Crookston, Peter L

From: Fred Reimherr [fred.reimherr@hsc.utah.edu]
Sent: Tuesday, June 01, 2010 9:11 AM
To: PRO NarrowsEIS
Subject: Comments on Narrows
Attachments: narrows comments June 2010.pdf

Mr. Crookston,

I would like to submit these comments in behalf of the Stonefly Society Chapter of Trout Unlimited.

Fred Reimherr

PRO OFFICIAL FILE COPY

RECEIVED

JUN 10 '10

Reply Date		
Date	Initials	Code
	<i>[Signature]</i>	100
	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
	<i>[Signature]</i>	700
	<i>[Signature]</i>	770
6/23/10	PC	774cy
Action:		
Classification: E10/L-6.00		
Project: Narrows		
Comments: 10041492		
ID: 1122816		

Stonefly Society Chapter Trout Unlimited
c/o Frederick Reimherr
482 12th Avenue
Salt Lake City, Utah
84103-3225
June 1, 2010

Bureau of Reclamation
Attention: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606-7317
Facsimile: 801 379-1152
narrowsSDEIS@usbr.gov

Dear Mr. Crookston;

The Stonefly Society Chapter Trout Unlimited has had a long history of opposition to this senseless, and highly destructive water project. We are Trout Unlimited's largest Utah Chapter and represent over a thousand Utah fishermen.

We have commented repeatedly on the Narrows Project. We financed the original study that documented the presence of the endangered pikeminnow in the lower Price River. We have worked with the Central Utah Water Conservancy District attempting produce an alternative for Sanpete County, a process that has been unfortunately side tracked by political pressure from Sanpete County.

Prior to considering specific points in the NPSDEIS, we have several very important general comments.

First, the process used to create this document is questionable. It has been drafted in secrecy with no involvement with the representatives of Carbon County or any of the interested environmental groups. The Price River watershed is highly valued by outdoor recreationists and environmental advocates. Adequate high quality water availability is critical to the economy of Carbon County. What should be a responsible public process has been turned into a clandestine plan between 2 public agencies.

Second, we believe the need for the project is too narrowly defined. A more reasonable approach would be enhancement of irrigation on a countywide basis. There is every reason to believe that a combination of support from the Central Utah Project Water Conservation Program, re-programming the Small Reclamation Projects Act support, and a payment for the Narrows water rights by interested groups (Carbon County, Utah Power & Light, other government agencies, or environmental groups) would provide funds for a more realistic alternative project. Such an approach would bring a 70 year-old conflict to an end and produce actual benefits for Sanpete County.

Third, many of the critical studies needed to assess this project have been withheld from the public. Documents and studies used to produce the NPSDEIS have been kept secret and not made accessible. We have sought basic information from the BOR regarding this project, but

were informed that all information supporting this document was private under ownership of the Sanpete Water Conservancy District. We believe that comment period on both the NPSDEIS and the 404 permit should be extended to allow public review of these critical project documents.

1-6 Purpose and Need

The purpose and need presents two needs – irrigation and municipal water needs. The document should assess alternatives for each of these needs separately. The project also defines the irrigation needs in such a narrow manner that almost by definition only this project will meet the Need. A more realistic definition of project need would be to evaluate alternatives to increase water available for irrigation on a countywide basis.

66-1 1-18 Interaction with Fairview Lakes – Need for an Operating Agreement

It is stated that an operating agreement would be arranged with the Cottonwood-Gooseberry Irrigation Company following obtaining an approved EIS and Record of Decision. Typically, in this situation the later arriving water project must guarantee the yield of the earlier project. Such an action will tend to increase project costs and reduce project benefits particularly during times of low water conditions. Such an agreement would control releases to the small creeks below Fairview Lakes, use of the Narrows Tunnel and division of project yields. In the past such disagreement between water districts have been very difficult to resolve. In order to fully understand the project benefits and costs such a document needs to be produced and presented publicly before releasing other environmental documents.

66-2 1-18 Interaction with Fairview Lakes – Additional wetland area

It is stated that 2.6 cfs of water from Fairview Lakes will be released into two small, unnamed streams. Based on the project yield, this means that almost the entire Fairview lakes yield will be released into these 2 streams. One is a new channel. The other is a channel that has been carrying project water to the transmountain tunnel. At the base of Fairview Lakes in this area, there is a substantial wetland area. With the reduction in flow, this area will shrink. This wetland area should be delineated and mitigation provided for its loss.

66-3 2-1 Financial Feasibility

According to the NPSDEIS, the project must be financially feasible. This cannot be determined based on information provided in this document. Again, this is a public process and a realistic discussion of the project's finances needs to be presented in a manner that allows for an assessment of the project's finances. Based on the more recent re-assessment of the project conducted by CH2MHill for the Central Utah Water Conservancy District working closely with the SWCD, the cost figures in the NPSDEIS seem open to question.

66-4 2-13 Narrows Tunnel Rehabilitation

It is stated that the Narrows Tunnel will be redone as part of this project. In the past, this was considered as a CUP 206 project. It is unclear in this document whether that is still the case. Will the 206 program pay a portion of the cost? How will the cost be allocated between the Narrows Project and the Cottonwood-Gooseberry Irrigation Company?

2-14 Fishery Mitigation Plan

- 66-5 We regard the fishery mitigation plan as inadequate. In the west, we deeply disagree with the provision artificial stream enhancement to replace loss of stream flow. Stream flows losses should be mitigated with acquisition of water for instream flow.

Gooseberry Creek (UDWR Class 3B - Unique) and Upper Fish Creek (UDWR Class 2 - Unique) are high value stream fisheries, those stream segments above Narrows, Cottonwood Creek, Mud Creek, Winterquarters Creek, or Pondtown Creek do adequately mitigate the loss of these two high value stream segments. At present, it is unclear whether there are willing sellers of these segments. It appears that the Mud Creek segment is not available.

The stream segments on upper Fish Creek and the Price River below Scofield have not been identified.

Finally, the document indicates that these five stream segments as well as sections above Narrows and below Narrows will be managed by the UDWR or the Forest Service. This would represent a yearly project cost that should be added to the project budget with a cost of living adjustment and a provision for periodic replacement.

66-6 **2-28 Mitigation Funding**

In multiple locations in this document, such as on page 2-28, it is stated that the SWCD will be responsible for "funding and acquiring all land and easements". Conversely, on page 2-31 it is stated these are "costs are nonreimbursable to the project sponsor." What exactly is the legal basis for the BOR declaring these costs as "nonreimbursable"?

2-31 Narrows Project Cost Comparison

- 66-7 The NPSDEIS has a cost estimate of \$40 million for the current project. The 2008 Final Report, Update to the Sanpete County Master Plan presents a cost estimate of \$59 million and this estimate did not include the "engineering for the project, contract administration, land acquisition, permitting, environmental documentation or any mitigation that might be required". This estimate was prepared by CH2MHill for the Central Utah Water Conservancy District working closely with the SWCD. The CH2MHill report represents the only partially neutral examination ever done on Narrows. There is a need to reconcile these cost estimates.

2-31 Table 2-5 Narrows Project Costs Comparison

- 66-8 Under the proposed Action, \$1,065,000 would be allocated to a Recreation Area and this would be a cost paid by the BOR. It is unclear how this funding would be arranged. In addition, according to the Fish and Wildlife Coordination Act Report, there would be a loss of 4,500 angler days at Schofield and an increase in 13,700 angler days at Narrows. 33% of this cost would in a sense be a replacement for losses at Schofield and consequently should be a cost allocated to SWCD as opposed to being paid by the Federal Government.

2-47 Alternatives Considered and Eliminated from the Study – Conservation Without Development of Other Water Supplies

- 66-9 Over the last 10 years, an impressive array of water conservation projects and alternative projects have been produced in cooperation with the Central Utah Water Conservancy District. Basically, more twice the amount of water provided by Narrows has been produced at a fraction the cost. The Sanpete County Master Plan as updated contained a list of additional water conservation projects that were not constructed. This section of the NPSDEIS seems

intentionally evasive. The list in the Master Plan should be updated and provided as a comparison to the proposed Narrows Project.

66-10 **2-58 Alternatives Considered and Eliminated from the Study – Conservation Through Retirement of Irrigation**

Again, the document is evasive. What has been the cost of recent land transactions in Sanpete County? We have been approached by several farmers in the Indianola area with the idea of selling the farms to transfer the water into San Pitch Drainage. Finally, and most disturbing, on page 1-12, the NPSDEIS acknowledges that within the project area, 33% of the currently irrigated land is considered marginal due to "poor soil, inadequate drainage, or topographic characteristics". Even more disturbing, on page 2-58, the NPSDEIS is actually misleading when it says that 2,760 acres would need to be retired or "18% of the 15,420 project-eligible lands" would have to be retired. Again, according to the NPSDEIS, there are 7,760 marginal acres of land being irrigated within the project boundaries. Consequently, there is abundant land that could reasonably be retired to provide additional water to better, more productive areas.

Other alternatives – Restoration of Current Transbasin System

As part of the preparation of the 2008 Final Report, Update to the Sanpete County Master Plan, we submitted a list of current transbasin diversions transporting water into Sanpete County. Many of these diversions are poorly maintained and like the Cottonwood-Gooseberry Irrigation Company's transbasin tunnel are in need of repair. In addition, the canal bringing water into Fairview Lakes is earth-lined and in need of lining in certain segments. Again, like the land retirement option above, some of these companies might seriously consider selling their diversion systems rather than continue maintaining them. Finally, these systems might function well on normal years, but on dry years their yield probably becomes even more limited.

3-4 & 1-19 – Upper Colorado River Endangered Fish Recovery Program

66-11 The Stonefly Society primarily funded the initial investigation that collected the first pike minnow in the lower Price River. We believe that stream segments such as the Price which have not had the severe problems with non-natives that are occurring on many stream reaches in the upper basin might be especially critical for the Recovery Implementation Program (RIP). A reference is given regarding the RIP flow recommendations for the Price. The reference does not lead to information on this issue. The recovery program was noted later in this document. Past studies have indicated that the lower Price River contains a relatively large percent of its biomass in native fish relative to other stream and river segments in the upper Basin of the Colorado River. Releases and spills for flushing flows in the Price might be especially critical for the RIP. Such flows might be much harder to create with the Narrows in place. The recommendations were to be released in the fall of 2009. Again, a Record of Decision based on this NPSDEIS should be delay pending the release and review of these flow recommendations.

3-11 – Hydrologic Studies

In past examinations of the Narrows Project, the Stonefly Society has funded a hydrologic investigation of the Narrows and also carefully reviewed data made available by project sponsors. Our conclusion was that there was not adequate water available in the Gooseberry Basin to both meet the projects stream flow obligations and the project water deliveries especially during times of low water yield. This type of access and review has not been possible with the current restricted access. On page 3-11 reference is made to 6 hydrologic studies

conducted by the BOR. These studies appear to be critical to understanding this NPSDEIS. They need to be made freely available and examined independently.

3-18 – Hydrologic Studies – Need for Scofield Replacement Water

- 66-12 The ability to store water in a Narrows Reservoir will depend upon Scofield having adequate water in storage to replace direct flow water rights. On page 3-18, it is stated that Scofield will be drained to the bottom of active storage 12 times in 43 years as opposed to 3 times in 43 years under the No Action Alternative. At these times, Narrows would have to stop storing water and start making releases to meet direct flow rights in the Price Basin. It is probable that during periods of low water yield in the Price Basin that such water will not be available. A discussion of this possibility needs to be included in the NPSDEIS.

3 – 18 Scofield Conditions and Threats to Rooted Macrophytes community

- 66-13 The present condition of Scofield is of great concern. It should be considered as a shallow lake. Its current state as a clear shallow lake represents a very high value water supply and recreational resource. The literature on shallow lakes shows that such lakes are highly vulnerable to conversion from a clear state to cloudy turbid conditions. Both shifts in phosphate loading or greater water level fluctuations will place the state of the reservoir in jeopardy. Such a switch would be an environmental catastrophe. The value as a reservoir fishery would be destroyed. The Price River below Scofield would be destroyed as a trout fishery. Finally, it is probable that water users downstream would face serious problems in water treatment. In addition, once such a shift occurs it is very difficult to reverse the condition. At this point, an outside review by a qualified limnologist would be a reasonable first step in considering the problem. A reasonable solution would be for the operation of Narrows to be contingent upon continued maintaining clear water conditions at Scofield.
- 66-14

Instream below Scofield

- 66-15 The Stonefly Society has had a long-term interest in flow conditions in the winter flow conditions below Scofield. At present there is no water released during the winter and the streambed is dry destroying what should be one of Utah's finest trout streams. We regard this as the most significant problem on the Price River. Both Narrows and Scofield Projects are not functioning in an environmentally responsible manner.

66-16 Need for Scofield Operating Agreement

Much like the Jordanelle-Deer Creek system, there will be a need for a Narrows-Scofield Operating Agreement. Many years there is very little water that can be stored at Scofield and almost the entire flow belongs to direct flow water right holders. The project functions only because of holdover water in the reservoir. The status of holdover water in the reservoir will be difficult to determine.

66-17 3-19 & 20 Impact of Loss of Periodic High Flows at Woodside

The NPSDEIS displays the loss of periodic high flows occurring at Woodside. The NPSDEIS points out that the very, very high flows occurring only once or twice in the period of record would still occur, but the years of moderate high flows would be almost completely lost. The NPSDEIS needs to give an assessment of what impact this change will have.

66-18 2-21 Reduction in External Phosphate Loading to Scofield Reservoir

This is a critical issue in maintaining water quality in Scofield Reservoir. However, since there is no specific mitigation plan presented in this document, other than the protection of several stream segments. Conversely, with increase in recreational activity upstream from Scofield, there is potential for increased phosphate loading to occur.

66-19 **2-22 – MOA on Fishery Measures**

It is stated that such a document will be created. To date no such document exists. Consequently, the adequacy of the plan cannot be assessed. The NPSDEIS budget states that all mitigation measures will be paid for by the BOR. Is this also true of the operation and maintenance expenses also? If so, what is the budget authority that will cover this cost?

We continue to be deeply concerned about this water project and believe that the severe impacts of this project represents a significant threat to Utah's environment and to the economy of Carbon County.

Sincerely,

Frederick W. Reimherr
Stonefly Society Chapter Trout Unlimited

**67. UTAH RIVERS COUNCIL, ROSALIE WOOLSHLAGE,
STAFF ATTORNEY**

Crookston, Peter L

From: Rosalie Woolshlager [rosalie@utahrivers.org]
Sent: Tuesday, June 01, 2010 6:24 PM
To: PRO NarrowsEIS
Cc: rosalie@utahrivers.org; 'Zach Frankel'; jacob@uec-utah.org
Subject: Utah Rivers Council Comments re Gooseberry Narrows Project and Utah Environmental Congress Adoption of URC Comments
Attachments: Utah Rivers Council Comments on Narrows Project SDEIS 6.1.10pdf.pdf



May 31, 2010

Mr. Peter Crookston
PRO-774
Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606-7317
narrowsSDEIS@usbr.gov
Via email and U.S. Mail

Re: Utah Rivers Council Comments Regarding *Narrows Project Supplemental Draft Environmental Impact Statement*

Dear Mr. Crookston:

On behalf of Utah Rivers Council, its members, staff, board and volunteers, I write respectfully to submit the following comments regarding the *Narrows Project Supplemental Draft Environmental Impact Statement* ("SDEIS") issued by your agency ("BOR") on March 29, 2010.

Utah Rivers Council ("URC") is a not-for-profit 501(c)(3) grassroots community-based organization that advocates for sound water policy and protection and conservation of Utah's rivers, streams, and clean water sources for today's citizens, future generations, and wildlife. The URC has a long history of involvement in the Gooseberry Narrows project ("Narrows Project" or "Project"). After careful deliberation and over 15 years of research, we believe the Project is an exceptionally poor use of tax money because of its staggering cost per delivered acre-foot of water, its destruction of sensitive riparian areas and fisheries, and the threats it poses to downstream human water supplies and economies.

For over ten years, we have been aware that the Central Utah Water Conservancy District ("CUWCD") has been heavily involved as a proponent of the Narrows Project. We would like an accounting from your office as to the role of the CUWCD in this Project.

The Narrows Project, as set forth in the SDEIS, is a relic of a bygone era, and is fundamentally flawed in a host of ways. It is neither economically nor politically feasible, and runs against the Bureau's own policy mandates regarding trans-basin diversions. It is under active and continuous protest from a number of organizations and parties in both the public and private sectors. The very program under which it is to be funded has been eliminated by Congress, and exists only under a grandfathered provision affecting fewer than a half-dozen small projects nationwide.

Opposition to the Project extends beyond the boundaries of Carbon and Emery counties. Conservationists, environmental and pro-fishing groups such as Trout Unlimited, Stonefly Society, and Utah Sierra Club all oppose the Narrows Project because of environmental damages, degradations and dewatering. Many of the owners of an estimated 500 recreational homes that have been built in the Scofield area, which will face impacts from the Project, are Utah citizens from the Wasatch Front. Scofield Reservoir also is home to a State Park and Boy Scout camps. All of these groups would be adversely affected by the Gooseberry Narrows Project.

Our comments concern two general points: 1) that the SDEIS for the Project fails its purpose under NEPA and is wholly inadequate; and 2) that the Project is as harmful and wasteful as when first proposed in 1993, and as such should not be funded through a loan through the Small Reclamation Project Act ("SRPA").

I. The SDEIS Fails to Fulfill Its Purpose and Mission Under NEPA.

The DEIS is inadequate and fails to comply with NEPA. First, and most importantly, it fails to provide the necessary data and analysis for BOR to determine if the SRPA loan should be approved or not. The DEIS states that, "Based on the analysis documented in the DEIS, the responsible official for Reclamation will make the following decisions: Whether Reclamation should approve SWCD's application for a SRPA loan to construct the Narrows Project."

67-1 The SRPA requires that a project be technically and financially feasible. In order to be financially feasible, among other things, the loan factor must be 0.5 or less. Since BOR's role in the project is limited to approval or disapproval of the SRPA loan, and approval is contingent upon the project's financial feasibility, then a significant portion of the analysis presented in the DEIS should have included a discussion of the financial feasibility of the project, the loan factor, project benefits, allocation of project costs, etc. Since this information was not provided, there is no basis for BOR to make its decision on whether or not the project is financially feasible or for the public to participate in this analysis.

The DEIS provides a fairly lengthy discussion of a proponent's "willingness to pay" and how this "willingness to pay" an additional commitment of other financial resources might justify approval of a project that would otherwise not be considered financially feasible (have a loan factor of less than 0.5). We have not been able to identify any policy, regulation or law that supports this notion and further discussion is needed. Since the DEIS goes out of its way to describe this "flexibility", it is presumed that the project doesn't have 0.5 or less loan factor and is the project is not otherwise financially feasible.

In your response to these comments, please provide additional discussion on exactly what the loan factor is without the commitment of other financial assets, and how much additional financial assets are required by the project proponent to meet the loan factor requirement.

There is also a significant body of research that shows stated "willingness to pay" often diverges from actual "willingness to pay", often as great as twice the stated amount (List and Gallet, *What Experimental Protocol Influence Disparities Between Actual and Hypothetical Stated Values?* *Environmental and Resource Economics*, Volume 20, Number 3 / November, 2001). The federal government needs to play a much more integral role in determining whether additional financial commitments are in fact available or reasonably anticipated to meet the 0.5 loan factor requirement. These financial resources should be legally binding in the form of a bond, contract or other financial commitment. Is this a one-time payment or based on an income stream, and if so, what is the sources of this income stream. What is the likelihood that the sponsor will have the ability to make these payments. This analysis should be provided and examined prior to making a decision as to approval of SWD's SRPA loan application.

Moreover, the SDEIS fails to provide any compelling need for the Project. The need to provide additional outdoor recreation is hardly compelling. The DEIS bases the need for additional flatwater recreation on the 1985 and 1990 Utah SCORP (25 and 20 years old respectively) and the 1986 Forest Plan (24 years old). The interest and demand for flyfishing has far outpaced flatwater recreation and this project certainly does not meet this need. According to the DEIS, the Utah Division of Wildlife Resources does not recognize the creation of a reservoir fishery as adequate compensation for the loss of stream aquatic resources and there appears to be a net loss of recreation benefits resulting from the project. Since BOR's role in the Project involves approving or disapproving the SRPA loan request, then the project should be evaluated as a single purpose irrigation project and not a multipurpose project providing recreation and fish and wildlife benefits. The project sponsor, SWD, has no authority or special expertise to be expending federal funds on fish, wildlife and recreation and the need for additional fish, wildlife and recreation has not been demonstrated. The only apparent reason to provide recreation facilities is to allocate a higher proportion of joint costs to recreation so the project appears to be more economically feasible.

The Project would essentially provide sufficient water to provide three alfalfa cuttings per year compared to the two cuttings that now occur. The two cuttings that now occur don't even account for the conservation and efficiency measures that will be implemented under the No Action alternative. If you take into account these conservation and efficiency measures, it appears that you could get three alfalfa cuttings per year under both the proposed Action and the No Action alternative. Similarly, basing your need on a field trip report documenting reduced crop vigor and weeds is hardly the basis for investment particularly since the conservation and efficiency measures that are planned under the No Action Alternative were not in effect.

The need for additional M&I water is based on growth rates suggested by local officials. These rates are more than double those estimated by Utah Office of Planning and Budget. Planning should be based the projections of professional demographers at not the minor peaks in short term growth rates that may have been experienced. With all respect, County officials lack the expertise to forecast population an employment growth rates.

The Narrows SRPA loan application was not complete in 1994, at the time the SRPA program was essentially suspended, because the program had not been conducted in a businesslike manner beneficial to the federal government. Congress determined that new subsidized irrigation and agricultural projects would no longer be supported. Nevertheless, the Narrows Project has continued to stagger along: it has reportedly already incurred costs of over \$1.6 million in nearly 40 years of controversy.

Pursuant to the SRPA, a plan and detailed cost estimate for the Project must be submitted "for review by the States of the drainage basin in which the project is located." 43 U.S.C. § 422d(a) (2007). The SDEIS acknowledges the Project's impacts on other Colorado River Basin states: "the project also would cause a depletion of about 5,597 acre-feet of water to the Colorado River system." SDEIS at S-20. However, nowhere is it indicated that BOR or any agency has submitted the SDEIS to any of the other five states in the Colorado River drainage basin. Thus BOR and Project proponents have failed to comply with the SRPA as well as NEPA.

67-2 Moreover, the data upon which the SDEIS for population and economics is so out-of-date as to
67-3 be useless and misleading. Utah is in a new economic reality, facing a real estate and employment crisis. Further, the United States and the entire world must address climate change, yet the DSEIS (unlike all recent NEPA documents to reach our office) fails in any way to discuss this urgent threat, let alone the Project's climate change direct, indirect, and cumulative effects. For this failure alone, the Project fails NEPA. The BOR should revisit the scoping stage, and only proceed with the Project when full NEPA compliance is achieved.

II. The Narrows Project Remains Harmful and Wasteful to Utah's Economy and Environment.

Although the economic boom-times that once may have made it seem viable are long gone, the environmental and economic harms that would be caused by the proposed Narrows Project have not lessened in the years since it was first envisioned. Those harms, all stemming from the dewatering of the headwaters of the Price River and construction of the dam/tunnel project, include grave threats to Carbon County's water supply and economic well-being and grave threats to the natural environment and ecological communities that rely on the flowing streams, upstream and downstream in and along the Price River.

Moreover, the Narrows Project is even more a waste of taxpayers' dollars and scarce economic resources than ever. A loan under the SRPA would be a risky mistake for BOR and taxpayers.

First, the Project endangers the water quality, water supply, and economic future of Carbon County. It is slated to destroy the headwaters of the Price River, including high-elevation meadows and wetlands. In addition to damage from direct flooding, dewatering, road-moving, dam- and tunnel-building, the BOR expects to withdraw 2,400 acres of pristine National Forest lands to serve as staging and gravel sources for the Project.

Operation of the Narrows Project will drastically reduce flows downstream. Downstream of the dam, the following flow reductions are predicted: 1) Upper Gooseberry Creek: 74% reduction; 2) Lower Gooseberry Creek: 43% reduction; 3) Fish Creek: 3-24% reduction. As a result of low water

levels, water quality and habitat in all the creeks and in Scofield Reservoir will decline. This dewatering is the basis for the catastrophic environmental and economic harms downstream.

The Project will reduce water levels in Scofield Reservoir, Carbon County's primary water supply. Due to these reductions, BOR has admitted that Carbon County would be faced with "the potential for serious drought consequences" as a result of the Project.

67-4 As the mid-2000s drought cycle demonstrated, there is simply not enough water in the system above Scofield Reservoir, even without the Narrows Project. During the drought, Scofield Reservoir dropped – without excess water currently discharged from mines upstream it would have been nearly empty. To take more water from the system through the Gooseberry Narrows project will have catastrophic effects during the next inevitable drought. In terms of human health, Scofield's decreased water quality may lead to outbreaks of gastrointestinal illnesses, similar to what has occurred during previous droughts.

67-5 For water users and holders of water rights, the Project is likewise untenable. Water in the Price River Basin is already over-allocated. The Project will exacerbate that problem and produce a climate ripe for conflict. It would virtually guarantee northern Sanpete County water users 100% of their yearly water allocations even during drought cycles. Yet Carbon County water users, with equally valid water rights, could expect in many years only fractional parts – 50%, 25% or less – of their yearly water allocations. This patent unfairness must be addressed by the BOR now, or it will be addressed in the courts later.

Because Carbon County has no alternative water supply, local economic growth will be stifled, possibly leading to negative growth and out migration. The 5,400 acre-feet sought by Sanpete Water District could support over 20,000 people: potential population growth, jobs, and economic expansion for Carbon County that will simply vanish with the diversion of water.

Tourism is an important industry and one under threat from the Project: at least 11% of Carbon County jobs and over \$36 million in income come from tourism, with fishing and recreation in and around Scofield Reservoir and Fish and Gooseberry Creeks a major component. Similarly, property values throughout Carbon County will decline as the scarce water supply pervades the community and hinders future growth. Recreation-based revenue from Scofield Reservoir will also decline while revenue generated from fishing streams, especially Fish Creek, will disappear.

Even PacificCorp's Price Canyon power-generating plant is in danger: diverting additional large quantities of fresh water away from Price Canyon, as the Narrows Project would do, could lead to shut-downs of the Carbon Power Plant during drought cycles. The plant requires 3,000 acre feet per year of water to generate electricity. If water is not flowing in the Price River, PacificCorp faces buying water at market rates (passing the premium on to Carbon County customers) or shutting off the lights. Therefore, Rocky Mountain Power opposes the Project as well.

67-6 In addition to higher rates and less water, public safety in the Price/Helper/Wellington/Carbon County area will be endangered because local fire departments won't have the necessary water reserves to fight fires. Further danger is built in to the Project: the proposed Narrows Dam is only designed to withstand a 5.5 level earthquake (whereas the Scofield

Dam was retrofitted by the BOR to withstand a 7.5 level earthquake) and the dam site is located in a geologic formation notorious for landslides.

Second, the Project will cause irreparable harm to the natural environment, not just in the flooded area but in the wetland, riparian, and upland areas for the entire 100-mile length of the Price River, its tributaries, and streams in the San Pitch drainage.

67-7 The Project will harm wetland hydrology. Riparian wetlands along the Gooseberry, Fish and Cottonwood Creeks will be altered by flow depletions and augmentations. Sediment-starved water releases will laterally erode or downcut middle Gooseberry Creek and drain adjacent wetlands. The Project could reduce Gooseberry Creek inflows by 91 %, essentially drying aquatic bed/shallow marsh wetlands associated with lower Gooseberry Reservoir. Two hundred fifty acres of shallow water littoral zone associated with Scofield Reservoir will face drastic impacts through reduced water flows. During critical spring months, the water table supporting middle Gooseberry Creek wetlands may decline by 1.4 feet to 1 foot after construction of the Narrows Dam.

67-8 The Project will destroy several miles of pristine high-mountain streams, over 100 acres of sensitive wetlands, and countless acres of riparian habitat. The roadless nature of the drainage also makes this one of the region's most valuable elk calving grounds. The disruption of the area due to dam construction and the subsequent road access will essentially eliminate the entire area as an elk calving area, putting increased pressure on one of the state's most popular game species. The BOR has failed to address exactly how these losses will be mitigated.

The Project reservoir will also flood one mile of upper Gooseberry Creek and 4.3 miles of small streams tributary to Gooseberry Creek. Still maintaining the Outstanding Values, including wildlife, habitat quality, diversity of species, and abundance of species, that made them eligible for protection under the Wild and Scenic Rivers Act, Gooseberry and Fish Creeks are highly valuable headwater tributaries to the Price River, which is a tributary to the Green River. Each creek retains its wild character, beautiful scenery, and lush riparian and upland habitats. The Forest Service has chronicled some of the creeks' outstanding features, including high quality habitat for fish, diverse wildlife habitat, and healthy riparian areas.

These headwater tributaries are deserving of protection because of the function they perform: critically influencing the character and quality of downstream waters. The health of headwater tributaries reflects on the health of the entire downstream river system. They support riparian wetlands which in turn support flood control. Those same wetlands filter nutrients that might otherwise enter the stream. They also provide significant high elevation wildlife habitat that is increasingly rare elsewhere because of human encroachment. Therefore, the protection of a headwater stream benefits not only that tributary, but serves to enhance the functions of larger downstream systems.

Fish and Gooseberry Creeks are headwater streams critical to the integrity of the Price, Green and Colorado River system. They function to provide ecosystem services such as natural flood control, groundwater recharge, sediment retention and water quality improvement, nutrient recycling, and the creation and maintenance of biological productivity downstream. There are very few free-flowing tributaries remaining in the Colorado River system. Those segments that persist without impoundments are unimpaired and are critical to the integrity of the overall system.

The Gooseberry and Fish Creek riparian wetlands function to improve water quality downstream. Given the pressures facing the Price River in the form of agricultural run-off, stormwater runoff, and over-grazing, the high quality flows from Fish and Gooseberry Creeks are critical to off-set poor water quality entering the system downstream.

- 67-9 In recognition of the scenic and natural qualities of the drainage, Fish Creek has been designated a National Recreation Area, and has had one of the very few national equestrian trail facilities in the state constructed to allow horseback riding enthusiasts to enjoy access to miles of roadless backcountry. Construction of the Project will directly and adversely affect this National Recreation Area.

Fish and Gooseberry Creeks are unique because they are accessible to anglers of all ages and abilities. Furthermore, the fish species variety makes these segments unique in that the catch is unpredictable. Because of the densely vegetated stream banks and the cover they provide, large fish are abundant. These characteristics make Fish and Gooseberry creeks highly valuable to both local and state-wide anglers.

- 67-10 Families, groups, and individuals visit and use the pristine Fish and Gooseberry Creek corridors for outdoor enjoyment. Activities range from fishing, hunting, hiking, and camping to the use of creek water for municipal supplies in Carbon County. Individuals who were baptized in Fish Creek still hold it dear to their hearts. Others value these creeks because they spent significant time on them as children or because they provide irrigation flows to farms and ranches that have been in the family for generations. The Carbon County community has significant cultural ties to these two creeks that make them invaluable as cultural and historical resources.

As Utah's urban areas grow and expand into formerly rural areas, the importance of headwater creeks such as Fish and Gooseberry Creeks only increases. It is important to provide places for people to observe unique wildlife, solitude, healthy air and clean water. Fish and Gooseberry Creeks provide such a resource as evidenced by the abundant fish and wildlife that use this corridor and the number of people who recreate here.

- 67-11 The Project also threatens Scofield Reservoir, Carbon County's main water supply and by size, far and away the most productive trout fishery in the State of Utah. It is second in actual production of trout only to Strawberry Reservoir, though only a tenth its size. The lake is very shallow, and its fishery biology is tied directly to a very large chironomid that is abundant in the lake, as well as to water temperature and even more importantly, to flush rates. To our knowledge, there has been no detailed, independent, and credible survey whatsoever of the impact that the diversion of Fish Creek, the lake's primary source of water, would have upon the fish, or upon the insect that sustains them. BOR's own Resource Management Plan ("RMP") recognizes that Scofield should be managed as an outstanding recreation site, and that such recreation is primarily tied to its fishery.

- 67-12 With the Project, the likelihood of fishkills in Scofield Reservoir also drastically increases as water quantity and quality decline. BOR's RMP for Scofield readily acknowledges that flush rates are a critical component of the lake's biology. Because the body of water is quite shallow and because of relatively high phosphorous levels, there occurs an annual algae bloom each summer. Unless enough water remains in the reservoir or comes into it late in the season, there is a very real threat of a

massive eutrophication, whereby large portions of the lake go completely anoxic. This would result in massive fish kills, as BOR recognizes have happened in past low-water events.

The importance of Scofield Reservoir to the citizens of Carbon County cannot be overstated.

- 67-13 Historically, Scofield Reservoir only spilled 33% of the time or 21 years in the last 63. As a matter of fact, during one of Carbon County's drought years on June 19, 1991, Scofield Reservoir's maximum active storage was only 3,000 acre feet out of a maximum active storage of 65,800 – or less than 5% capacity. This amount of water represents only 10% of what Carbon water users actually use if available with their valid water rights – 30,000 acre feet per year.

Even with several years of severe water restrictions in place during a recent drought cycle, water levels at Scofield Reservoir became so low that in the fall of 1991, Carbon County's Road Department's personnel and heavy equipment were dispatched to dredge Scofield Reservoir so the County would have enough water to meet the essential needs of its citizens. Had the Narrows Project been in place during this time, Scofield Reservoir would have been completely out of usable water at least one or two years before the drought finally ended and 20,000 citizen lives and property would have been put in jeopardy.

- 67-14 To comply with NEPA, BOR should undertake and include in its EIS documentation a complete and independent biological review of the Scofield reservoir, including the impacts of the proposed dam on flush rate, eutrophic cycles, threats to both the fish and the fishery, insect life cycles and sensitivities, phosphorous and other nutrient factors, and littoral zone impacts. Moreover, in accordance with Section 2 of the Federal Water Project Recreation Act, please show what costs have been allocated to recreation and fish and wildlife enhancements. Which of these costs are separable costs and which of these costs are joint costs? What are the benefits of recreation and fish and wildlife and what is the cost of providing recreation or fish and wildlife enhancements benefits of reasonably equivalent use by the least costly alternative?
- 67-15

The harms this Project will cause to the flowing upper Price River headwater streams, Scofield Reservoir, and along the full length of the Price River manifest in harms to wetlands and riparian areas and the fish, birds and other wildlife that rely upon them for survival.

Over 100 acres of wetlands will be inundated, and decreased water flows from the Project will directly, seriously, and immediately degrade and destroy some of the healthiest riparian areas in the entire state. Wildlife biologists suggest that nearly 90% of wildlife species use riparian zones at some point in their life cycles, especially in an arid state like Utah.

Healthy, fully functioning riparian corridors are rare in Utah – in fact it occupies less than 1 percent of the state's land cover. However, 75 percent of Utah's bird species use riparian habitat to nest, forage, water, migrate and/or winter.

The riparian habitat that makes the Price headwaters area unique is composed of extensive tracts of willows and cottonwoods with a variety of species and age-classes, including *Salix boothii*, *S. drummondiana*, *S. lasiandra*, and *S. exigua*. According to *An Evaluation of the Possible Effects of the Proposed Narrows Reservoir on Two Stream Segments Eligible for Inclusion in the Wild and Scenic River System*, issued by the U.S. Forest Service in 2004, it is "the quality and diversity of the willows in these stream segments that make them regionally important for wildlife. The current flow regime in

this system has contributed to the development and maintenance of the willow complex that forms the underpinning of the outstanding remarkable value for wildlife." In a state where few rivers or creeks remain unaltered by some sort of dam or diversion, it is rare to find a waterway that supports a healthy, robust, and diverse willow/cottonwood wetland system.

Within the riparian corridor, the soils are cryoaqualls, histic and highly organic. Such soils act as sponges to absorb high flows in the spring, and release them slowly into the stream as the summer progresses. They increase the potential of riparian wetlands to provide nutrient transformation, biodiversity and uniqueness/heritage functions. Their sponge-like absorption is critical to prevent downstream scouring of the streambank and bed. The flows released late season are invaluable to downstream water quality and fish and wildlife habitat, especially in the arid environment of the Price River basin. In fact, the Sacramento District of the Corps of Engineers restricts histosols, including fens, from permitting under certain Nationwide Permits because they are unique and deserving of special protection.

- 67-16 The willow-filled drainages of Gooseberry and Fish Creek provide Utah's only documented habitat for the southwestern willow flycatcher, a federally threatened species. The drainage represents a healthy natural mid- altitude riparian ecosystem with natural drainage patterns, one of the most rare habitat structures in the state. The drainage is naturally regulated by a healthy beaver population, which stabilize drainage fluctuations to the degree necessary to assure healthy willow stands along nearly the entire drainage. The resulting riparian footprint of the stream is much wider than would be possible if the stream flow were to be controlled by upstream impoundments.

These riparian willow communities now face inundation from the Project, and even unflooded areas will be vulnerable to intrusion by non-native invasive species such as clover, yarrow and thistles resulting from project-related changes to spring flow levels.

Wildlife will be harmed by the Project up and down the Price River as well. The Project will reduce habitat for spawning populations of native Bonneville cutthroat trout. The Fish Creek drainage are home to Utah's most robust natural cutthroat trout spawning run. This drainage is the major tributary to Scofield Reservoir, for its size the most productive cold-water trout fishery in the state. Each spring it is the site of a massive spawning run. Many thousands of large, actively-spawning fish can be easily seen from the trails, and redds are carefully protected from wading damage by strict fishing regulations which prohibit fishing until after the eggs have had the opportunity to hatch and the fry move out of gravel and into vegetation. The scope of the run and the vigor of the fish are unique to Utah.

- 67-17 Even more critical for purposes of the law, reduced flows in the lower Price River will harm spawning habitat for the endangered Colorado River Squawfish. The Price River Gorge, comprising the lower 35-40 miles of the Price River above its confluence with the Green River, is a nearly-40,000 acre roadless Wilderness Study Area. The temperature of the free-flowing Price River becomes quite warm as it makes its way through the desert, and the warm water provides a rare suitable spawning ground for the endangered Squawfish. Likewise, the riparian corridor through the Gorge hosts literally scores of species, and though it is proposed wilderness, the SDEIS has entirely failed to analyze the impacts of Price River diversion on this precious unique Gorge and the Squawfish critical habitat there. Such a failure is a violation of the Endangered Species Act. Please respond as to how

BOR and proponents plan to protect this endangered species and WSA and why this information was omitted from the SDEIS.

While the DSEIS fails to include conclusive studies of the harms the Project will cause to bird populations, the Forest Service recognizes portions of Fish Creek's riparian zone to contain the highest density of flycatcher species in the state. The area has been described as an "outstanding example of good riparian management... good riparian habitat, as found in the Upper Fish Creek drainage, is important for this species. Willow Flycatchers can be found from the inlet into Scofield Reservoir to the confluence with Gooseberry Creek ... As evidence of this 54 species of birds have been observed in Fish Creek during the breeding season."^[1] Species include the Red-napped sapsucker, Northern goshawk, Broad-tailed hummingbird and Yellow-breasted chat. The water courses also provide habitat for diverse raptor species, such as golden eagles and red-tailed hawks. The Project seriously threatens habitat for all these species, as well as the deer, elk, beaver, black bear, and moose that use the riparian areas for forage, nesting, and habitat.

- 67-18 Moreover, higher concentrations of boron and selenium resulting from diminished water quality may reduce the reproductive success of threatened Columbia Spotted Frog populations and other amphibians, as well as reptiles and invertebrate species in the drainages.

- 67-19 Section 6(b) of the Federal Water Project Recreation Act requires costs allocated to Fish and Wildlife Mitigation to be reimbursed. In response to these comments, please show how fish and wildlife mitigation have been allocated and that they are reimbursable and included as part of the economic feasibility analysis.

In providing a miniscule benefit to a few, for a staggeringly high cost, with all the harms set forth above, the Project is a waste of taxpayer money. The proposed dam will cost at least \$40 million to deliver 5,400 acre-feet of water at a whopping cost of \$7,407.00 per acre-foot. Sanpete water users already divert an estimated 10,000 to 20,000 acre feet of water per year from Carbon and Emery Counties.

The BOR even admits that the project's cost cannot be accurately predicted. Although the Project is supposedly a 'loan', it is really a sweetheart deal made at the expense of taxpayers. Better and cheaper alternatives exist. Currently, the water goes towards high-value uses (industry and municipal use) whereas the Project will convert most of the water to a low-value use (supplemental irrigation for subsidized alfalfa production). No new land will be put into production by the Project. The Sanpete Water District has proposed a complicated plan involving much long-term management. They have "promised" to do this, but have not offered any type of fully funded endowment to insure full and ongoing mitigation.

Sanpete County has already been given substantial public assistance in expanding its local water supplies in a manner that has been highly cost effective with few (if any) adverse environmental impacts. The cost to produce the Narrows water far exceeds the market value of water in Sanpete County. It also far exceeds the cost of water saved through water conservation efforts - the main alternative to the Narrows Project.

The BOR must provide detailed quantification of the hard costs of the proposed dam, and a study of the lost costs to the state due to the loss of fisheries and habitat in all three affected bodies of

water. Such studies should include accurate accounting of the use of the Scofield, Price River, and Fish Creek drainages by fishermen, hunters, and recreationists and equestrian enthusiasts.

III. Conclusion

In conclusion, the era of large federal dam-building projects for irrigation is over. The Narrows Project is not viable environmentally, economically, or politically: it is a boondoggle and a waste of scarce taxpayer dollars. The catastrophic harms it will bring to pass on the human and riparian communities that rely on Price River drainages and water are not worth the huge \$40 million price tag and the miniscule and dubious benefits. The SDEIS is fatally flawed, and the Bureau of Reclamation should decline to authorize the Narrows Project and reject SWD's SRPA loan application. We look forward to your written responses to the questions contained herein. Thank you for the opportunity to provide these comments.

Sincerely,

Rosalie Woolshlager
Staff Attorney

68. WESTERN WILDLIFE CONSERVANCY, KIRK C. ROBINSON,
EXECUTIVE DIRECTOR



ORIGINAL
Western Wildlife Conservancy
Protecting wildlife and wildlife habitat in the Intermountain West
through research, education and advocacy

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801-468-1535
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MAY 27 10

Reply Date	Date	Initials	Count
		JS	100
		JS	105
		JS	107
		JS	700
5/28/10	5/28/10	SCA	770
5/28/10	5/28/10	PC	774

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Actions:

Classification: ENVI-6.00

Number: 10036150

1124314

May 26, 2010

Mr. Peter Crookston
PRO-774 Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606-7317

Mr. Timothy R. Witman
Project Manager, Regulatory Division
U.S. Army Corps of Engineers
533 West, 2600 South, Suite 150
Bountiful, Utah 84010

Gentlemen:

On behalf of Western Wildlife Conservancy, a non-profit wildlife conservation organization with headquarters in Salt Lake City, I am writing to you out of concern regarding the Sanpete Water District proposal to divert water from the Price River watershed in Carbon County west into Sanpete County. WWC is adamantly opposed to this idea. John Wesley Powell realized the wisdom of settlements adjusting to the arid climate of the West and to constraints imposed by watersheds. Additionally, we now know that diverting water out of a watershed in large quantities is ecologically unsound.

Our concerns include:

- the \$40 million price tag, and who will bear this cost
- the probable negative effect on the culinary water supply for Carbon County communities
- potential negative effects to Scofield Reservoir for water storage and recreation
- negative impacts to the riparian ecosystem of the Price River
- negative impacts to the endangered Colorado River squawfish

Additionally, the best scientific information available suggests that global climate change will affect the region negatively, probably resulting in decreased amounts of annual precipitation in decades to come. It seems unwise to do something that will make Sanpete County residents dependent upon water that Carbon County residents will surely need in the future. Why should Sanpete County residents get water that, by rights, belongs to Carbon County residents? This is an arid land. All of us had better learn to live within our means.

Sincerely,

Kirk Robinson

Kirk C Robinson, PhD, JD
Executive Director, Western Wildlife Conservancy
68 South Main St., Suite 4
Salt Lake City, Utah, 84101

Board Members

John Carter,
PhD Ecologist

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Aquatics Ecology

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Utah State University

Doug Smith, PhD
YNP Wolf Recovery
Project Leader

Jonathan Ratner, MS
Rangeland Ecologist

David Stoner
PhD candidate, USU
Cougar Researcher

William Newmark
Utah Museum of
Natural History

68-1

BUSINESSES

- 69. Anderson Service Center**
- 70. Aspen Groves Assets, David Asay, Coordinator**
- 71. Castlevew Hospital, Jeffrey Manky, MD, CEO Castlevew Hospital**
- 72. Castlevew Hospital, Max Morgan, Castlevew Hospital**
- 73. CentraCom, Eddie L. Cox, President**
- 74. Ephraim Mini Storage**
- 75. Fairview Land and Livestock Company, Jack McAllister, President**
- 76. Hard Hat Furniture and Appliance, Paul Hoffman, Owner**
- 77. Madsen Chiropractic, Charles Howard, Owner**
- 78. Moroni Feed Company, Kent Barton, President**
- 79. Moroni Feed Company, Brandon P. Olson, Chief Financial Officer and Vice President**
- 80. PacifiCorp, Cody Allred, Water Resources Engineer**
- 81. Sacco Brothers Land and Livestock, Rex Sacco**
- 82. Sanpete County Broadcasting Company, Douglas L. Barton, President**
- 83. Time and Thrift, Robin Anderson**

70. ASPEN GROVES ASSETS, DAVID ASAY, COORDINATOR

77C

ORIGINAL

ASPEN GROVE ASSETS, INC.
11355 E. 16000 North
Mt. Pleasant, UT 84647

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APR 20 '10

April 19, 2010

Peter Crookston
PRO-774
302 E. 1860 South
Provo, UT 84606

Dear Mr. Crookston:

Reply Date		
Date	Initials	Code
	<i>[Signature]</i>	100
	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
	KE	700
5/20/10	BA	770
5/28/10	PC	774

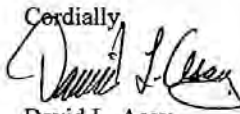
Action:
Classification: ENV-16.00
Project: Narrows
Contract No.: 10029024
File No.: 1122-876

- 70-1 We own 800 acres in the Mt. Pleasant area of Sanpete County. While most of our land is agricultural, we also encompass the Pine Creek Ranchos subdivision which has 103 lots. We own 44 of those lots and have sold many to people currently building homes in the area. We work hand in hand with the area's water district and are extremely conscious of the water needs of our area.

Our county needs water! For ourselves, we have promoted water conservation and supported every viable effort to stretch that water. We have plans to add more acreage under cultivation and our area is growing triple the county average. The Narrows Project is the best alternative to addressing the water needs of this end of the county.

From what we have studied about the proposal, the environmental impact is negligible, state resolutions have been passed approving the dam to be built and it just makes sense to get Sanpete the 5400 acre feet of water due to the county.

We fully support the Narrows project and urge all of our elected officials to do the same. Please help get the water flowing!

Cordially,

David L. Asay
Project Coordinator
Aspen Grove Assets

71. CASTLEVIEW HOSPITAL, JEFFREY MANKY, MD, CEO



300 North Hospital Drive
Price, Utah 84501
(435) 637-4800

May 27, 2010

Mr. Peter Crookston
PRO-774
Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606-7317

Dear Mr. Crookston:

As the Chief Executive Officer of Castlevew Hospital in Price, Utah, I am writing to express my sincere concern regarding the Gooseberry Dam project proposed by Sanpete County officials.

I am writing strictly from the perspective of the major healthcare provider of hospital services in a large two county area. So much of what healthcare providers afford patients is dependant upon sufficient water supplies. We certainly are not talking about watering lawns or producing crops, we are speaking of keeping patients alive.

- 71-1 Allow me to give just one example. On Castlevew Hospital's campus, we have partnered with the University of Utah Hospital in providing a significant Dialysis Outpatient Clinic. Many people outside of the healthcare arena are unaware of the significant need for sufficient water supplies to treat just one dialysis patient. On a normal dialysis day at the clinic, they treat, on average, ten to fifteen patients per day. They are open 6 days per week. Any interruption of water supplies for this single treatment alone, would be catastrophic for the entire population of dialysis patients. Without ample water supplies, patients on dialysis would die, literally.

I entreat you to consider all the facts as decisions are being made about this new dam project. I do not envy your decision and wish you the very best as this project is debated. Please feel free to make contact with me, if you need any further assistance with statistics, etc.

Castlevew Hospital certainly votes NO on this new dam and the catastrophic effects it could have on the water supply for patients and residents of Carbon & Emery counties.

Thank you for your valuable time reading my comments.

Most Sincerely,

Jeffrey J. Manley, CEO
Castlevew Hospital

ORIGINAL

PRO OFFICIAL FILE COPY

RECEIVED



MAY 28 '10

COPY

Reply Date

Date	Initials	Code
		100
		105
		107
		700
		770
		774cy

Action:

Classification: ENV - 16.00

Project: ALAKROWS

Countdown: 10037351

File ID: 1122816

72. CASTLEVIEW HOSPITAL, MAX MORGAN, CASTLEVIEW HOSPITAL

06/01/2010 18:42 FAX 4356371581

MAX MORGAN

001

ORIGINAL

COPY

FAX



MAX G. MORGAN M.D.
230 N. HOSPITAL DRIVE, SUITE #4
PRICE, UTAH 84501
PHONE: 435-637-2300 FAX: 435-637-1581

To: Peter Crookston
Fax #: 801-379-1159
Date: 6/1/10

From: MAX G MORGAN /
Pages (including Cover): 10
Re: Gooseberry Creek

Enclosed are copies of medical
letters generated by the Castleview
Hospital Medical Staff in
regards to Scofield & Gooseberry
issues

As you can see Residents
of Carbon County were very sick
drinking bottom water from Scofield
during the drought years

Max Morgan

06/01/2010 18:43 FAX 4356371581

MAX MORGAN

002

MAX G. MORGAN, M.D
590 EAST 1ST NORTH, #5
PRICE, UTAH 84501
TELEPHONE (801) 637-2300

June 21, 1994

Bureau of Reclamation
Regional Environmental Office
125 South State Street
P.O.Box 11568
Salt Lake City, UT 84147

RE: Gooseberry Project

Dear Sirs:

It is my understanding that an EIS is being prepared for the Gooseberry Project. I was unable to attend the local hearing on the comment date and I feel that I have comments and information that are crucial to full consideration of project impacts which will be unavailable without consideration of my letter.

I would like to take this opportunity to address the water issue of long standing concern existing between Carbon County and Sanpete County residents. The issue specifically involves the Gooseberry Water drainage into Upper Fish Creek and ultimately into Scofield Reservoir.

Before going any further, I would like to apologize for not attending the public hearing in Price concerning this issue. As a physician, my intention was to present some information from a medical perspective, but needless to say a medical emergency called me away.

As you are aware, the residents of Carbon County obtain their irrigation and culinary water from the Scofield Reservoir and from some mountain springs. However in 1992, during the midst of the drought, while on water rationing since April, most of the culinary water came from the bottom of the very low Scofield Reservoir. The reservoir was so low that later that fall, it was necessary to dredge a channel from the residual reservoir water to the outlet of the dam in order to allow more water out to supply the residents of Carbon County.

This highly concentrated bottom water is therefore the source of concern to this Carbon County Physician of twenty two years. My practice in 1992 can be characterized as a year where patients presented to the office with a high incidence of gastroenteritis, symptoms of abdominal cramping, nausea, vomiting and bloody diarrhea. Along with this, there appeared to be an increase in the number of patients with hepatitis.

Other physicians in Carbon County both in private practice setting and in the emergency room have voiced these same concerns during the 1992 drought year. A concentrated effort is in

place to document the statistical numbers of hospital admissions related to gastrointestinal disorders during that year in comparison to non drought years. The number of patient office visits related to gastrointestinal disorders will be much more difficult to document.

My conclusions would be that the increased number of cases of intestinal disorders were related to the consumption of this highly concentrated bottom water. Whether there were residual bacterial coliforms present in the treated water or whether it was necessary to superchlorinate the water to render it safe is unknown. There were numerous complaints of cloudy drinking water. "swamp-smelling" bathing and drinking water and at times water from the tap that tasted like Chlorox. Never the less, the quality of this water was affected by the drought conditions.

- 72-1 There does seem to be a correlation between low reservoir water levels and drought conditions and between low water levels and gastrointestinal disease in Carbon County. Diverting water away from Carbon County in the future will adversely impact the critical water levels we now have and can adversely impact the health of the residents of Carbon County. This is especially true in future drought years.

Thank you.

Sincerely,

M.G. Morgan, M.D.

MGM/bk

06/01/2010 18:44 FAX 4356371581

MAX MORGAN

004

MAX G. MORGAN, M.D.
590 EAST 1ST NORTH, #5
PRICE, UTAH 84501
TELEPHONE (801) 637-2300

August 24, 1994

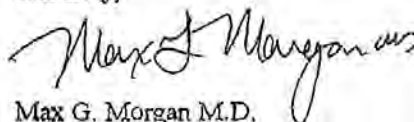
Dear Medical Staff Members,

I'm forwarding a copy of my letter to the Bureau of Reclamation to you. The intent of the letter is to let you know what is developing in regards to our future culinary water in Price.

I am soliciting information and request you send me a short letter or note indicating if you found a trend in Health Care Problems in the years 1989 to the present. Specifically I would like to focus on only Gastrointestinal Disorders (i.e. Hepatitis, Infectious Colitis, Gastroenteritis, etc.).

Please send your letter as soon as possible. Time is of the essence.

Sincerely,

A handwritten signature in cursive script that reads "Max G. Morgan M.D.".

Max G. Morgan M.D.

06/01/2010 18:44 FAX 4356371581

MAX MORGAN

005



**CASTLEVIEW
HOSPITAL**

September 6, 1994

Max G. Morgan, M.D.
590 East 100 North
Price, Utah 84501

Dear Dr. Morgan:

It's my understanding that there are some hearings going on regarding the quality of water in Carbon County and possible diversion of water from the Scofield drainage system.

Given the history of our recent drought situations which have extended across the past five years and the quality of the water and the amount of rationing we have had to undergo suggests to me this is a very poor idea. It is also my impression that during these drought years there have been much higher than average numbers of gastrointestinal diseases, including what have often been diagnosed as viral gastroenteritis symptoms, Type A hepatitis, and also documented bacterial enteric disease.

Please voice my support of any efforts to defeat the bill which would divert any water from the Scofield drainage system into other systems.

Sincerely,

Cameron S. Williams, M.D.

CSW:sam

300 N. Hospital Drive
Price, Utah 84501
Telephone: (801) 637-4800

An Affiliate of HCA/HealthTrust, Inc. - The Hospital Company

06/01/2010 18:45 FAX 4358371581

MAX MORGAN

006

Kurt V. King, M.D.
INTERNAL MEDICINE

280 NORTH HOSPITAL DRIVE, #3
PRICE, UTAH 84501.
Telephone (801) 637-7178

August 29, 1994

Dear Dr. Morgan:

I found your letter to the Bureau of Reclamation very interesting. I like you, don't have the computer necessary to tell me the diagnosis that brought people into my office. Never the less, It is my opinion that there was more gastrointestinal disorders during the last drought year.

As a water consumer, I also noticed that the water was cloudy at times, and smelled musty. I also noticed that it tasted bad.

I like you do not know the mechanism for the increased incidence of stomach problems during the drought. It could have been due to super-chlorination, or to the highly concentrated bottom water.

Sincerely,

Kurt King MD

P.S. I and my nurse were both concerned about the water to the point that both she and I used bottled water for our families.
Kurt.

06/01/2010 18:46 FAX 4356371581

MAX MORGAN

007



**CASTLEVIEW
HOSPITAL**

August 29, 1994

Max G. Morgan, M.D.
590 East 100 North, No. 5
Price, Utah 84501

Dear Dr. Morgan:

In regards to your letter to the Bureau of Reclamation, I have made an informal review of patients that I have seen in the emergency room in the past several years. I have noted a small increase in gastrointestinal disorders. This seems to have been an increase in hepatitis as well as infectious colitis and some gastroenteritis lately. This may be related to the water situation at Scofield. This is at least a concern of mine, and I am as well concerned about the drawing off of water by reservoir at its lower levels.

Please register my concerns with the Bureau of Reclamation.

Sincerely,

Arvid A. Carlson, M.D.

AAC:lb

300 N. Hospital Drive
Price, Utah 84501
Telephone: (801) 637-4800

An Affiliate of HealthTrust, Inc. - The Hospital Company

08/01/2010 18:46 FAX 4356371581

MAX MORGAN

008

KEVEN D. BROCKBANK, M.D.

590 East 100 North, #6
Poe, Utah 84501
(801) 637-8220

August 30, 1994

Dear Dr. Morgan:

I recieved a copy of the letter that you sent to the Bureau of Reclamation concerning the Gooseberry Project. I remember very well severe drought that peaked in the summer of 1992. During that time I definately noticed a major increase of the patients with gastrointestinal complaints. Initially I thought that it was just an increase in the flu but the histories just were not quite right. My practice is not computerized so I am unable to effectively retrieve the data to support my impressions. Knowing the depth of our water supply at Scofield Reservoir, I would consider it as a very possible source of the increase in GI illness.

Sincerely Keven Brockbank M.D.

A handwritten signature in black ink, appearing to read 'Keven Brockbank M.D.', with a stylized flourish at the end.

06/01/2010 18:47 FAX 4356371581

MAX MORGAN

009



CASTLEVIEW HOSPITAL

August 30, 1994

Bureau of Reclamation
Regional Environmental Office
125 South State Street
P. O. Box 11568
Salt Lake City, Utah 84147

RE: culinary water in Carbon County area

Dear Sirs,

This letter is to further voice concerns being raised in this area regarding the decreased availability of adequate drinking water in the Carbon County area. Previous letters have been forwarded to you by other physicians, specifically Dr. M. G. Morgan. I have been a primary care physician in this area for the past eleven years and have watched water go from an over abundance in the early 1980's to frank scarcity throughout the latter 1980's and throughout the 1990's. The concern of the medical community in this area is fairly straight forward. A lack of potable water is clearly related to disease world wide. There is no exception. There is no reason this should not apply to our area as well.

This area clearly did have an increase in gastrointestinal disease including hepatitis. Specifically a large epidemic of hepatitis swept through the area in 1992. Other gastrointestinal diseases which are known to be water-borne also appear to have increased during that time frame.

There is no good statistical data to support the assumption promoted by Dr. Max Morgan; however, it is a reasonable consideration. Prior to diverting further precious drinking water out of the area for nonculinary purposes, this hypothesis certainly needs to be examined. I would appreciate greatly if you would at least give consideration to a study into this matter. If we are able to obtain adequate time to produce this study, it is possible we could enlist epidemiologists and professionals specifically trained to deal with such problems.

Your consideration of our concern and at least a proposed study would be greatly appreciated by the medical community of Carbon County.

Sincerely,

Glenn T. Etzel, M.D.

300 N. Hospital Drive
Price, Utah 84501
Telephone: (801) 637-4800

An Affiliate of HealthTrust, Inc. - The Hospital Company

06/01/2010 18:47 FAX 4356371581

MAX MORGAN

010



August 30, 1994

TO WHOM IT MAY CONCERN:

I was asked by Dr. Max Morgan to express my views on water issues in regards to the carbon and Emery County areas. I have practiced in this area for eleven years, doing family practice. My partner and I have seen nearly every resident of the two counties at one time or another over the last eleven years. During that time we have noticed a severe increase in gastro-intestinal difficulties in draught years. It is obvious that bottom water out of our reservoirs is contaminated to a point that our patient population is at risk to become ill when exposed to this. It would be difficult to understand why any elected official would feel it necessary to divert water from our relatively densely populated area into a less populated area because of these health reasons.

I stand, therefore, against any diversion of reservoir water out of our area. I believe that if public funding is in excess and there is a question as how best to utilize the money, it might be reasonable to take a look at our highways which are considered death traps.

Sincerely,

Fred W. Feuerstein MD
Fred W. Feuerstein, M.D.

FWF/rs

300 N. Hospital Drive
Price, Utah 84501
Telephone: (801) 637-4800

An Affiliate of HealthTrust, Inc. - The Hospital Company

73. CENTRACOM, EDDIE L. COX, PRESIDENT

AL

ORIGINAL

PRO OFFICIAL FILE COPY
RECEIVED

MAY 20 '10

May 19, 2010

Bureau of Reclamation
Attn. Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606

Re: Gooseberry Narrows Project

Dear Mr. Crookston:

73-1 I am writing in support of the proposed Narrows Dam & Reservoir.

As the President of CentraCom (a rural communications company serving Sanpete County), the Chairman of the Trustees at Snow College, a former Sanpete County Commissioner, and a rancher living in Fairview, I know of the desperate need for water storage in Sanpete County. While the history of lost opportunities, broken promises, and general record of this project have been lived by me and my family for at least three generations, I would prefer to focus on the present and future needs of this water for Sanpete County and the State of Utah.


Sanpete is growing county that will need water storage to sustain its growing population. Sanpete is a bedroom community for the Wasatch Front. All of the water that is used for municipal water systems presently come from wells and springs in the canyons. There is no storage facility for surface water in any of the communities in north/central Sanpete County from Fairview to Manti. Sanpete is the only county of any size that does not have the ability to store surface water. The new storage facility needs to be implemented to reduce on-going water shortages presently, and to prepare for continued growth in the future.

This project will have significant economic impact during the construction of the Narrows dam, but more importantly for 100+ year life of the facility. It is estimated that this will create at least one million dollars per year of economic benefit for Sanpete County. While the immediate impact for farming pursuits is sizeable, the future opportunities for light industry, community growth, and the "ripple affect" from the Narrows project as a reliable storage facility are immense. I believe that the general well being of the residences of Sanpete County will be improved. Economic well being fosters more people investing in education and the outlook for a positive future. The impact on public education, Snow College and other institutions will be favorable. The ability to keep our educated young people in Sanpete County will have a natural upward impact on people's earning ability. In turn this will foster more investment in the community and a better more secure future for the county and the people who call Sanpete home.

Reply Date		
Date	Initials	Code
5/20	PC	100
	PC	105
	PC	107
	KS	700
6/16/10	PC	770
6/17/10	PC	77404
Action:		
Class/Section: ENR - 6.00		
Project: Narrows		
Comments: 10033423		
FID: 1127816		

I recommend that the Bureau grant a perpetual easement for the construction, operation, and maintenance of the Narrows project, and that the loan for the construction of the Narrows be approved. This project is good for Utah and should be moved forward without delay.

Sincerely,

A handwritten signature in black ink, appearing to read "Eddie L. Cox".

Eddie L. Cox
25290 N. 11500 E.
PO Box 219
Fairview, Utah 84629

74. EPHRAIM MINI STORAGE

ORIGINAL

May 25, 2010

Dear Mr. Crookston,

74-1 I am a life long resident of Sanpete County. A family member served on the water conservancy board for many years. He worked really hard on getting the Narrows Project to come to pass. There have been many points of view expressed on the project, but the bottom line is that it is our water and we need to have a way for it to be delivered to Sanpete County. There is no water storage available for the northern half of Sanpete County. If we could get the late water from the Narrows Project we could possibly grow a 3rd crop of alfalfa and we could utilize our pastures better because we would have water for our animals.

The people who years ago filed on that water knew how important it would be to our area. I feel that there would be many good benefits come from the Narrows Project. The dam would provide not only the water we need but would boost the local economy through recreation. Municipalities would also benefit from having this water for future growth.

It just seems that if this is our water, and there seems to be no dispute about that, we should be able to get the water. It's just wrong that Carbon County has been able to use our water all these years and has forced us to spend thousands of dollars to fight for something that should have been done 60 years ago.

If this is our water, I just don't understand why the Narrows Project is being debated at all. It's time to do the right thing and for politicians to stop pandering to Carbon County in the hopes of being re-elected. I think it's also a shame that for the price of a postage stamp, environmental groups can stop the work that decent, honest men have spent years working on.

I hope you will be fair in your decision because right is right and wrong is wrong. The right thing to do is to give Sanpete County a way to get the water that is our.

Sincerely,



EPHRAIM MINI STORAGE
320 WEST 100 NORTH
EPHRAIM, UT 84627

PRO OFFICIAL FILE COPY
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JUN 01 '10

Reply Date		
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Action:		
Classification: ENU-6.00		
Title: NARROWS		
Comments: 10037590		
ID: 1122816		

75. FAIRVIEW LAND AND LIVESTOCK COMPANY,
JACK McALLISTER, PRESIDENT

ORIGINAL

NARROWS PROJECT

Peter Crookston, PRO-774
Bureau of Reclamation
302 East 1860 South
Provo, UT 84606-7317

SDEIS
COMMENTS

From:
Fairview Land and Livestock Co.

General Comments:

We have a sheep operation and own most of the private land underlying the proposed reservoir, subject to an easement in the Sanpete Water Conservation District (SWCD). to flood the property. We support the project and encourage prompt decisions, construction of the dam and development of the water.

Many agriculture operations, including ours, run out of water around July, and the flow becomes insufficient for the last months of Summer. This problem has gone on for several decades. Our urgent need for water in the north of Sanpete County remains desperate, and this project will be of great benefit for our area as well as downstream to the Sevier river and on to Delta.

We support the 17,000 acre feet alternative as the most efficient and cost effective manner of getting the water to where it is needed, and further benefiting additional agricultural operations and public entities down stream.

While some citizens of Carbon County are against the proposed project in any shape or size, they must recognize: 1) legal ownership of the water in question is settled in favor of the SWCD, 2) the equity of water usage is clearly in favor of the project since Carbon County residents have more than sufficient irrigation water and storage capacity, and will still have sufficient water to last their growing season, and 3) basic fairness should not allow political expediency to frustrate the project at the expense of the rightful water rights owner. Justice can only be served by honoring the water rights and allowing the project to go forward.

COMMENT: GRAZING ALLOTMENTS pages 3:88-90

75-1

In our operation we hold 2 of the 3 affected allotments. The proposed project would cause a loss of 856 acres (directly) and 1870 acres (indirectly). There should be some way to designate the acreage and quantify the percentage lost to each individual allotment. This project may reduce one or both allotments so as to become economically unfeasible to operate, thus causing some damage to the remaining portion.

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MAY 24 '10

Reply Date	Initials	Code
01, 2010		100
		105
		107
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		710
		714.04

Action:
Classification: GAD-1000
Project: NARROWS
Control No: 10035124
Folder ID: 1122.816

COMMENT: CONSERVATION EASEMENTS Pages 2: 28-30

Conservation easements of 500 feet from the water line appear to prohibit livestock grazing or watering at the reservoir. On the face of it this easement would deprive us of the use of our entire property for agriculture purposes. Specific arrangements should be allowed with each individual land owner according to their respective needs, as part of the negotiation process. If grazing or watering is eliminated, there arises a concern for damage to the use and value of the remaining property, especially for agricultural purposes.

- 75-2 Because of this potentially extreme effect on our livestock operation, some consideration should be given to a land trade: the land needed for the project could be traded for sufficient adjacent forest land to compensate and replace the land needed for the project.

COMMENT: COTTONWOOD STREAM & PIPELINE Pages 3: 99-100

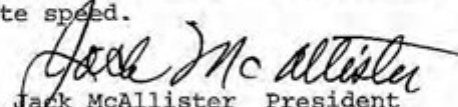
- 75-3 The pipeline will be constructed from the tunnel to a point 300 feet down stream from left hand fork, with a significant increase in stream flow. We are concerned with possible increased erosion and potential loss of an access road down stream. To ensure that the increased flow will not impact channel stability, an automated remote device at the canyon mouth will signal a valve at the tunnel inlet which will automatically control releases.
- 75-4

There should be some assurance that the signal is reliable to pass through the mountain or otherwise actually and reliably reach the control valve seven or eight miles away. In the event the valve fails, who will monitor the stream flow? Who is to provide armoring materials if needed? And if we find damage, who do we contact for help?

Additionally, because the Cottonwood stream will be in a pipeline, consideration should also be given to improving the sight distance and parking area at the severe curve on Highway 31 near the outlet of the pipeline in Section 23. This location is heavily used by snowboarders and vehicles during the winter recreation months. It should be possible to accomodate snowboarders with little additional expense to widen the highway for a small parking space. In past years accidents and even fatalities have occurred on this particular curve. This improvement could be made when the pipeline is installed in the important interest of highway and recreational safety.

We appreciate the well considered SDEIS and the opportunity to comment on the project and how we believe it will impact our interests. We encourage a decision to go forward with all deliberate speed.

cc:
David Cox
SWCD


Jack McAllister President
Fairview Land & Livestock Co.
138 West 400 North
Mt. Pleasant, Utah 84647
(435) 462-2625

76. HARD HAT FURNITURE AND APPLIANCE, PAUL HOFFMAN, OWNER

ORIGINAL

May 28, 2010

Mr. Peter Crookston
PRO- 774
Bureau Of Reclamation
302 East 1860 South
Provo, Utah 84606-7317

Dear Mr. Crookston,

- 76-1** As a small business owner and resident of Carbon County, I am writing to express my concerns regarding the Gooseberry Dam Project proposed by Sanpete County Officials. This should be a cut and dried issue when the obvious factors are considered. Water supply to Carbon County is provided solely by Scofield Reservoir, therefore it is our lifeline. Without it, WE DIE !
Sanpete County would only produce a few more bales of hay with our precious water. It doesn't make any sense to jeopardize the lives of Carbon County residents, just to fulfill the greed of a few politicians.
I am urging you to do everything possible to shut this project down once and for all.

Thank you for your time and consideration.

Sincerely,

Paul Hoffman/ Owner
Hard Hat Furniture & Appliance

Hard Hat Furn. & Appl.
21 West Main St.
Price, UT 84501

PRO OFFICIAL FILE COPY

RECEIVED

JUN 01 '10

Reply Date		
Date	Initial	Code
	<i>[Signature]</i>	100
	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
	<i>[Signature]</i>	700
6/13/10	<i>[Signature]</i>	770
6/21/10	<i>[Signature]</i>	774cy

Action:
Classification: END-6.00
Narrow
10038018
1122816

77. MADSEN CHIROPRACTIC, CHARLES HOWARD, OWNER

PRO OFFICIAL FILE COPY
RECEIVED
APR 23 '10

Madsen Chiropractic

Fast, affordable, and effective pain relief

Charles A. Howard D.C.

DC: Western States Chiropractic
College, Portland, OR
Licensed: State of Utah
Department of Commerce
Division of Occupational &
Professional Licensing
77-1 Member: American Chiropractic
Association

Bureau of Reclamation
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, UT 84606

Dear Sirs,

The purpose of this letter is to give my full-hearted support to the Narrows Project to provide the much needed and long delayed water storage for Sanpete County. There is no question that this will have more utility to this County than anything else that could be considered.

Effective relief of your pain...

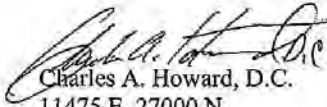
- Back
- Neck
- Headaches
- Automobile accident injuries & whiplash
- Arthritis
- Shoulder & extremity
- Workers' Compensation
- Carpal tunnel syndrome

...today!

- No-Wait Guarantee
- Most major insurance plans accepted
- Flexible in-house financing available
- Open five days a week
- Lunchtime & evening appointments
- Emergencies seen promptly

We have been promised this long ago. Please give us the Narrows Dam and Reservoir now! Thank you for your timely consideration.

Sincerely,


Charles A. Howard, D.C.
11475 E. 27000 N.
Fairview, UT 84629

Copy Date	Initials	Code
5/3	PC	100
	PC	105
	PC	107
	KS	700
5/2/10	PC	770
5/10/10	PC	774 copy

Action: END - 10.00
 Classification: NARROWS
 File #: 100-2781
 Date of AG: 1122816

435 South Main ▲ Ephraim, Utah 84627 ▲ (435)283-4069 ▲ Fax (435)283-0372

78. MORONI FEED COMPANY, KENT BARTON, PRESIDENT

ORIGINAL

Crookston, Peter L

From: kbarton@norbest.com
Sent: Sunday, May 30, 2010 9:23 PM
To: PRO NarrowsEIS
Subject: Narrows Project

Dear Mr. Crookston -

78-1 I'm writing this letter to encourage your support for the completion of the Narrows Dam and Reservoir project for Sanpete County.

As president of the largest employer in Sanpete County I can tell you that there are a host of reasons for which the project makes sense including agricultural, economic, recreational, etc. But in the end, what it all comes down to is that Sanpete County has the legal right to the water in question and, the project has been approved on multiple occasions over many years.

Our economy in Sanpete is fragile, we rely heavily on the agriculture sector for which water is our life blood.

I think it's ironic that Carbon County opposes the project for among other reasons "environmental concerns" when they have been on the other side of that argument so frequently in the development of their vast and rich energy resources.

Sanpete has legal right to the water and the project has been approved. Please, let's move forward and get it completed.

Respectfully,

Kent Barton
President
Moroni Feed Company / Norbest
Sent from my Verizon Wireless BlackBerry

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79. MORONI FEED COMPANY, BRANDON P. OLSON, CHIEF FINANCIAL OFFICER AND VICE PRESIDENT



May 20, 2010

Bureau of Reclamation,
Attn: Peter Crookston, PRO-774
302 East 1860 South
Provo, Utah 84606

Dear Bureau of Reclamation,

79-1 I am writing this letter as the Chief Financial Officer for Moroni Feed Company. Since 2007 three major events created the perfect storm and have negatively impacted Sanpete County, which the narrows project, if completed prior to 2007, would have brought balance to the county's disproportionate share of the negative economic effects.

Let me first provide a few facts. Moroni Feed Company formed as a farmer cooperative in January of 1938. Since that time we have become an "all-inclusive" turkey production cooperative and the largest employer in Sanpete County—until just recently. A study performed by the economics department of Utah State University in 2008 suggested that Moroni Feed Company represented approximately 11% of all employees in the county with approximately 14% of the total payroll.

In 2008, there were two segments of agriculture and the energy sector that saw records set. The protein industry saw input costs of grains go through the roof i.e. Corn went over \$8.00 per bushel—the 15 year historical average for Moroni Feed Company had been \$2.60 per bushel; the second segment of agriculture with records was field farming, where alfalfa crops received \$210 per ton and as previously mentioned, grain farms received the highest prices ever for their crops; the energy sector bragged on wall street about record setting profits as fuel hit \$4.79 per gallon. Coal also benefitted substantially.

A major factor impacting the corn market has been the energy policy, where government subsidies are provided for ethanol production. The average corn ethanol plant receives approximately \$1.40 per bushel in subsidy at \$0.50 per gallon of ethanol, where one bushel makes approximately 2.8 gallons. This has created a substantially unbalanced playing field for users of Corn—Turkeys rely on 60% of their diet and 60% of their cost

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Moroni Feed Co.

P.O. Box 368 MAY 24 '10
15 East 1900 South (Feed Mill Road) Moroni, Utah
84646
435-436-8221 Fax 435-436-8101

Reply Date		
Date	Initials	Code
	<i>PC</i>	100
	<i>PC</i>	105
	<i>PC</i>	107
	<i>PC</i>	100
6/4/10	<i>PC</i>	770
6/21/10	<i>PC</i>	774cy

Action:
Classification: ENV-10.00
Project: Narrows
Contract: 10035078
Date: 1122816

of production from corn and have to overcome \$1.40 more cost per bushel than those that chose to turn corn into fuel—the subsidy has arbitrarily inflated the corn market.

The Narrows Project would have provided the balance through the only “Oil” Sanpete County has available to it. Our turkey producers that have field farms have always been able to balance poor turkey years with crop production. In 2008, Moroni Feed Company systematically laid off roughly 450 employees for a season while some balance returned to the grain commodity markets. The “cut your losses” approach still saw nearly \$11,000,000 in losses which meant a change of over \$17,000,000 from the prior year. While many of our turkey producers have field farms, the energy and feed costs were not overcome by crop production in 2008. However, if the Narrows project’s considerable water storage would have been in place it would have meant millions more to our county in second and third crop alfalfa.

Instead, the largest employer had to cut production to reduce additional losses and cut employment, all the while Sanpete County’s water flowed into the energy rich Carbon County. 2008 will most definitely go down in the record books for Sanpete and Carbon County—Sanpete lost substantially and Carbon benefitted substantially. Moving the water to the rightful owner would not have greatly impacted Carbon County negatively, yet it would have meant millions to Sanpete and brought some balance to the situation.

I urge you to move as swiftly as possible on this project. Allowing the project to be delayed any longer is not only not acceptable but nearly criminal. The studies have shown that the major concerns Carbon County is throwing at this project are either false or will be managed with proper oversight, engineering, and construction and are merely meant to delay as long as possible. Please help Sanpete County better weather the next “perfect storm” by providing us with OUR water.

Sincerely,

A handwritten signature in black ink, appearing to read "Brandon P. Olson", with a stylized flourish at the end.

Brandon P. Olson, CPA
V. P. & Chief Financial Officer
Norbest & Moroni Feed Company
O: (435) 436-8221
F: (435) 436-8101
Email: brandon@norbest.com

80. PACIFICORP, CODY ALLRED, WATER RESOURCES ENGINEER

HL

ORIGINAL



May 28, 2010

Bureau of Reclamation
 Attention: Peter Crookston, PRO-774
 302 East 1860 South
 Provo, UT 84606-7317

Re: **PacifiCorp** Comments to the Narrows Project – Supplemental Draft
 Environmental Impact Statement

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5/28/10	LA	100
	PK	105
	KS	107
6/16/10	PK	700
6/21/10	PK	774cy

Project: **PNU-16.00**
 Classification: **Narrows**
 P...: **10037650**
 C...: **1122816**

Dear Mr. Crookston:

Please find below PacifiCorp's comments regarding the Narrows Project Supplemental Draft Environmental Impact Statement (SDEIS). Our comments start with an Introductory section followed by General Comments.

Introduction

PacifiCorp is a large, regulated western electric utility that serves approximately 1.6 million residential, commercial and industrial electric customers throughout its six state service territory. In Utah, we operate our retail electric service business under the name of Rocky Mountain Power and our electrical generating facilities under the name of PacifiCorp Energy. Our comments, however, will simply refer to PacifiCorp and not differentiate by business name.

PacifiCorp owns 6,400 gross megawatts of coal-fired generation company-wide in addition to other generating resources including hydroelectric, natural gas, geothermal and wind. We own approximately 15,000 miles of transmission lines, 40,000 miles of overhead distribution lines and 11,000 miles of underground distribution cable across the west. The 15,000 miles of transmission lines interconnect with other utilities in about 150 locations enabling PacifiCorp to buy and sell power with more than 60 other western utilities. This makes PacifiCorp a critical resource for supplying and moving power throughout the western states.

PacifiCorp Interest in the Narrows Project SDEIS – PacifiCorp is the owner and operator of the Carbon Power Plant, which is located in the Price River basin, near Helper, Utah. The plant can generate 175 megawatts from its regional coal and water supplies, which is about the amount of electricity needed to serve nearly 90,000 average sized homes. The Carbon Plant currently employees 69 people who are mostly residents of Carbon

and Emery counties. The Carbon Plant has an annual operating budget of 33 million dollars. Of this amount, about 19 million dollars is for the coal that is mined locally and is consumed by the plant to generate electricity.

The Carbon Plant has been in operation since the 1950's and has operated continuously since that time except for maintenance and unscheduled outages. On average, the Carbon Plant consumes approximately 2,100 acre-feet of water on an annual basis, which is nearly 700 million gallons per year. In some years, the plant has consumed nearly 3,000 acre-feet of water. Without an adequate water supply, the plant cannot operate continuously.

The Carbon Plant water supply consists of direct flow rights, groundwater wells, and storage water rights in Scofield Reservoir. Generally, these sources supply the necessary amount of water to meet the plant's needs. Typically, the Carbon Plant's Scofield Reservoir supply is held in reserve for use during the non-irrigation season (November through March). Releases from Scofield are made on demand during periods when natural flows are not sufficient to meet plant demand or when freezing conditions restrict river flows. During the droughts of the early 1960's and 1990's, Scofield Reservoir was drained to the dead storage pool, which caused the power company to take extraordinary measures to ensure continued operation of the Carbon Plant, including temporarily leasing water from local irrigators. This drought-year example is noted to demonstrate the role that Scofield Reservoir plays on the operation of the Carbon Plant, as well as to demonstrate the nature of empty reservoir conditions that are real – not hypothetical events.

General Comments

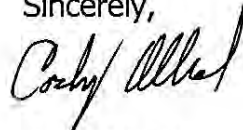
- 80-1 PacifiCorp offers the following general comments regarding the Narrows Project SDEIS:
1. The proposed Gooseberry Narrows Project significantly increases the potential for Scofield Reservoir to be drained to the bottom of its active storage. Figure 3-1, on Page 3-17 of the SDEIS, shows a comparison of the storage contents of Scofield Reservoir from the period of 1959 to 2003. This comparison shows that the frequency of Scofield going empty increases from 3 times in 43 years for the No Action Plan (which is the historical operation) to 12 times in 43 years with the Proposed Action. The possibility of having Scofield Reservoir empty one out of every 3-4 years causes PacifiCorp some concern.
- 80-2
2. Although the future impacts of this project are unknown at this time, according to the data set in the SDEIS, it appears this project could have detrimental impacts on the Carbon Plant one out of every 3-4 years. This in turn, could result in PacifiCorp seeking replacement water and/or power from alternative sources, which would likely result in increased costs to our customers.

- 80-3 In summary, it is important to understand that PacifiCorp has valued customers in both Sanpete and Carbon Counties, as well as the rest of the State of Utah. Because the Carbon Plant supplies electricity to Sanpete County, Carbon County and many other areas throughout Utah (including the Wasatch Front), PacifiCorp believes that the interests of all its customers and rate payers are best served by the continuous and cost effective operation of the Carbon Plant.

Therefore, PacifiCorp's primary interest in these proceedings is to minimize the impact the Narrows Project may have on the Carbon Plant and on our customers. This means maintaining the ability to continuously operate the Carbon Plant by ensuring a reliable and cost-effective long-term water supply.

PacifiCorp appreciates the opportunity to submit these comments. Please contact Cody Allred at (435) 687-4306 with any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Cody Allred". The signature is fluid and cursive, with the first name "Cody" and last name "Allred" clearly distinguishable.

Cody Allred
PacifiCorp Energy - Water Resource Engineer

81. SACCO BROTHERS LAND AND LIVESTOCK, REX SACCO

AL

Crookston, Peter L

From: Rex L. Sacco [Rex.Sacco@carbon.utah.gov]
Sent: Tuesday, June 01, 2010 11:00 AM
To: PRO NarrowsEIS
Cc: Rex Sacco (saccos@emerytelcom.net)
Subject: S-B comments on Gooseberry 6_1_10.doc
Attachments: S-B comments on Gooseberry 6_1_10.doc

To whom it may concern,

Attached are comments from Sacco Brothers Land and Livestock, a Utah general partnership who is an affected interest in this proposed project. We hope that these comments will be used and considered appropriately in this NEPA process.

Thank you

Rex Sacco
General Partner/Agent
Sacco Brothers Land & Livestock
1655 W. 2100 N.
Helper, Utah 84526

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Reply Date	Time	Priority	Code
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		105	
		107	
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6/23/10		770	
6/23/10		774	

Classification: ENVI-600
Narrows
10041646
1122816

SACCO BROTHERS LAND & LIVESTOCK
1655 W. 2100 N. Helper, Utah 84526
435-637-5001

May 31, 2010

Mr. Kerry Schwartz
Water and Environmental Resources Division
Manager, PRO-700
Bureau of Reclamation, Provo Area Office
302 East 1860 South
Provo, Utah 84606-7317
Telephone: (801) 379-1150
faxogram: (801) 379-1159
email: narrowseis@usbr.gov

Re: Comments on the Gooseberry Narrows Project Supplemental Draft Environmental Impact Statement (SDEIS); *Filing Number:* DES-09-55

Dr Mr. Schwartz,

Please accept the following comments for consideration before using Small Reclamation Projects Act (SRPA) funds to construct the proposed Gooseberry Reservoir. We expect the following comment to be made a part of the administrative record and used appropriately as governing laws and regulation allow to make a comprehensive determination prior to releasing any federal funding or allowing any federal property to be used to support this proposed project.

Substantive comments:

- 81-1 The costs of construction reflected in the supplemental draft (SD) are out dated.
- 81-2 Property values are underestimated.
- 81-3 The seismic standard evaluated for construction is below that mandated and implemented on the Scofield Reservoir leaving us to believe the level of protection is substandard and will leave every human, animal and ecosystem downstream in danger. It also doesn't reflect the true cost to perform this needed protection.
Taking away the Scofield shoreline property from existing residents to raise the shoreline level in case the Gooseberry Reservoir failed and then specifying a lower level of seismic protection would constitute a capricious and arbitrary action by the BOR and is subject to federal legal challenge.
The reservoir is too large for the amount of water that Sanpete would be allowed to take.
The surface areas of both reservoirs, (Scofield and Gooseberry) would be 32% larger, greatly increasing water loss due to evaporation.
Placing the subject reservoir in the proposed location; which is the highest precipitation water shed area in Emery, Carbon and Sanpete Counties (2,600 acres w/ a 60" + moisture average) is synonymous with painting a sponge, and will reduce the watershed output and water quantity for all the affected interests.
- 81-4 Road reconstruction costs are greatly underestimated. New design technology was not considered and could double the present construction costs leaving the estimated costs in the SD spurious as best.
- 81-5 Downstream impacts to existing water rights and wildlife especially aquatic wildlife are dangerously underestimated.
This is only a partial list of substantive comments that alone should create a question in the mind of anyone who is trained and knowledgeable of the impacts decisions of this nature could make as to the validity of funding this project.
We leave it to the bureau to consider whether it is realistic to believe that the SRPA program would provide sufficient funding to completely accomplish this project. The State of Utah can't help with this project. This year Utah estimated revenue shortfall of \$685 million with a \$100 million plus deficit. Next year is projected to be as bad or worse.

Gooseberry Narrows Project SDEIS Comments/Page 2

Procedural Comments:

Because every alternative supposedly made under the NEPA process never gave an opportunity for any affected interests input or consideration of their county plans and objectives; and were never offered involvement as cooperators as prescribed by Congressional law and Interior regulations and supported by the 10th Circuit Court Decision in Uintah County v. Norton and other legal decisions that further call for the federal agencies to allow local government's input and participation in these important matters to the local citizens of the area's most affected by any federally allowed actions, we vigorously protest the procedural nature of the building of this document as well as that of the original EIS that this document is supposed to supplement. We believe that this action allowed the omission of certain important facts that should have been viewed under the scrutiny of a NEPA analysis but was never brought to light in the interdisciplinary process thereby rendering this EIS inconclusive and arbitrary. We believe that if Carbon County were to challenge this action it would bring light to the exclusionary policy of the lead cooperators during the construction of the environmental analysis and reflect the need to begin this process all over again.

Sacco Brothers appreciates the opportunity to comment on this very important and life changing document. For the sake of many thousands of residents both present and future that live and own property and water rights downstream of the proposed project, consider the irreversible changed to our culture, lifestyle and economic stability that this proposed action will create.

Sincerely,

Sacco Brothers Land & Livestock
Rex Sacco, Partner/Agent

- xc. Congressman Jim Matheson
Carbon County Commission
Carbon Water Conservancy Board
Senator David Hinkins
State Representative Christine Watkins
State Representative Patrick Painter

82. SANPETE COUNTY BROADCASTING COMPANY, DOUGLAS L. BARTON, PRESIDENT

Mid Utah Radio Mail - Support Narrows Project for Sanpete County

Page 1 of 1

ORIGINAL



Doug Barton <dougb@midutahradio.com>

Support Narrows Project for Sanpete County

1 message

Doug Barton <dougb@midutahradio.com>
To: narrowsSDEIS@usbr.gov

Mon, May 31, 2010 at 3:21 PM

5/31/10

COMMENT ON THE NARROWS ENVIRONMENTAL IMPACT STATEMENT... FOR SANPETE COUNTY.

82-1 I favor the creation of the Narrows Dam & Reservoir and encourage the Bureau of Reclamation to issue a favorable Record of Decision on the Project because Sanpete County's need for water storage is far more important than any environmental or other considerations weighing against the Narrows Project.

I am a life-long resident of Sanpete County and own and operate three radio stations in the county. I have been in business for over 35 years and probably understand the economic needs of Sanpete better than anyone else in this county. I was a farmer and livestockman prior to entering the radio broadcasting business in Sanpete.

I have followed this project all of my adult life and it is time for Sanpete to get the water and storage they were promised 70 years ago. The courts have upheld Sanpete's water rights to the project and so let's stop the delays and give Sanpete the water and storage we badly need. There is no reason for Carbon County to complain & attempt to delay and stop the project.... they received their legal water right 50 years ago and have the water storage to go with it. Sanpete has none.

Sanpete County must have the Narrows Project water and reservoir to preserve the county's agriculture industry. The ability to store water from the heavy spring run-off is critical. Sanpete County is also growing in population and this water storage will be critical for residential drinking water. The added recreational opportunities will be a real boost to the economy as will the construction jobs.

The positive effects of this Narrows Project for Sanpete County far out-weighs any negative environmental impacts that it may have, if any on the landscape. If Sanpete County had been allowed to construct the project years ago when it was first promised by the Federal Govt. and the Courts.... we would not be going through all this "Red Tape" and the associated legal and environmental study fees. The time is now.... so grant permission and let's move forward.

Thank You,

Douglas L. Barton
President... Sanpete County Broadcasting Co.
KMTI/KLGL/KMGR/KMXD Radio Stations

Address: 390 West 500 North
Manti, Utah 84642
Cell Phone: 435-340-1075.
e-mail.... doug@kmtiradio.com

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JUN 01 '10

Reply Date		
Date	Initials	Code
	<i>[Signature]</i>	100
	<i>[Signature]</i>	105
	<i>[Signature]</i>	107
6/16/10	KS	700
6/21/10	BCA	770
	PC	774 cy
Action:		
Classification: ENV - 6.00		
Topic: Narrows		
Classification: 10037674		
Version: 1122816		

<https://mail.google.com/a/midutahradio.com/?ui=2&ik=be7306af12&view=pt&search=sen...> 5/31/2010

83. TIME & AGAIN THRIFT, ROBIN ANDERSON

83-1

To all concerned,
I own a small business in
Fairview, and slowly I have
watched our town, County shrivel
up from lack of jobs, our young
people are leaving.

We need this water
for more than one reason, so
please help us.

Robin Anderson
Time & Again Thrift
Fairview, Md.
P.O. Box 299A 84629